

BOLD VISIONS IN EDUCATIONAL RESEARCH

Transforming Urban Education

**Urban Teachers and Students
Working Collaboratively**

Kenneth Tobin and Ashraf Shady (Eds.)



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Transforming Urban Education

Bold Visions in Educational Research

Volume 38

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Books on *teaching and learning to teach* focus on any of the curriculum areas (e.g., literacy, science, mathematics, social science), in and out of school settings, and points along the age continuum (pre K to adult). The purpose of books on *research methods in education* is **not** to present generalized and abstract procedures but to show how research is undertaken, highlighting the particulars that pertain to a study. Each book brings to the foreground those details that must be considered at every step on the way to doing a good study. The goal is **not** to show how generalizable methods are but to present rich descriptions to show how research is enacted. The books focus on methodology, within a context of substantive results so that methods, theory, and the processes leading to empirical analyses and outcomes are juxtaposed. In this way method is not reified, but is explored within well-described contexts and the emergent research outcomes. Three illustrative examples of books are those that allow proponents of particular perspectives to interact and debate, comprehensive handbooks where leading scholars explore particular genres of inquiry in detail, and introductory texts to particular educational research methods/issues of interest to novice researchers.

Transforming Urban Education

Urban Teachers and Students Working Collaboratively

Edited by

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and

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FOREWORD

While Kenneth Tobin was on the science education faculty at Florida State University he was encouraged by Alejandro Gallard to orientate his research toward equity associated with social categories such as ethnicity, race, gender, and English language proficiency. In collaboration with colleagues, he began a large graduate degree program for elementary and middle schoolteachers in Miami Florida, to improve the quality of science and mathematics education. This work whetted his appetite for research in urban education.

In 1997 Tobin took up a position in urban science education at the University of Pennsylvania (Penn) and began a program of research on the teaching and learning of science in urban high schools. With the support of grants from the Spencer Foundation and the National Science Foundation he collaborated with numerous scholars from the university and public schools to develop a program of research that was situated in inner-city high schools and embraced sociocultural theory. The work was designed to improve practice in the schools and classrooms involved in the research while elaborating theoretical frameworks. As well as conducting research on interaction ritual chains, identity, solidarity, and emotions the studies initiated inquiries on coteaching and cogenerative dialogue.

In the fall of 2003 Tobin joined the Graduate School and University Center of the City University of New York (i.e., The Graduate Center), the same semester in which a doctoral student, Ashraf Shady, coeditor of this volume, joined the PhD in Urban Education. In New York City Tobin and his doctoral students expanded on the studies undertaken in Philadelphia. Just as he did in Philadelphia, Tobin initiated research squad meetings to include colleagues from other universities and his doctoral students. At these meetings we ironed out issues of theory, methodology and research design to address the pressing needs of the time. In the decade Tobin has been at the Graduate Center the focus of the research squad, moved increasingly away from Science, Mathematics, and Technology to align more with the learning sciences, covering a broad array of curriculum topics and the science of teaching and learning. The 22 chapters included in this volume derive from this on going research program in urban education, focusing on important issues associated with education in New York City and surrounding school districts. Except for the chapters Tobin authored, each first author is a graduate from the Graduate Center. Each chapter contributes uniquely, emphasizing strengths in diversity and the value of adopting non-deficit perspectives. Whereas each chapter includes a foundation of sociocultural frameworks, there is rich diversity in the research included in the volume. The research extends far beyond hackneyed terms such as qualitative and quantitative methods to display multi-logical, multi-method, and multilevel research that embraces a wide range of styles.

FOREWORD

Transformations in Urban Education: Urban Teachers and Students Working Collaboratively addresses novel constructs and approaches. The empirical work presented here concerns teachers and students who considered research in their own classroom as necessary/essential. This contrasts radically with the prevailing stance of policy makers and administrators who fail to see the value of learning from research, regarding research as a disruption to teaching and learning rather than a core activity needed to foster improvements through emergent and contingent transformations that serve participant teachers and learners. Instead of one-size-fits-all approaches that have characterized education in an era of globalization, neoliberalism, and commodification of education, research methodologies like those featured in this book offer the potential for teachers to collaborate with students to improve the quality of learning, teaching, curricula, and schools. Instead of focusing on testing, testing, and testing it makes sense to pick up on what is being learned by researchers who have contributed to this volume.

History suggests that the research undertaken and reported here will be disseminated through ripple effects rather than a worldwide tsunami. It is unlikely that policymakers will search for a book such as this and pore over the pages to glean the knowledge to transform their schools and school districts. We should bring it to their attention! This book is likely to be read by teachers in graduate school, teacher educators completing doctoral degrees, and faculty seeking to get involved in research that builds on what has been undertaken. The transformative potential of the research reported in the book was catalyzed by the conduct of research and expanded as teachers and students used what they learned from the research to make changes in their lifeworlds (including other classes in which they participated). Similarly, having read the book, or parts of it, readers can act differently in the world as teachers and learners not only in formal institutions such as schools and museums, but also in institutions not usually associated with education – including recreational facilities, prisons, churches/synagogues/temples, and homes.

There are many ways to think about research and its representation in books and journal articles. We view this research as continuing ongoing dialogue we are privileged to join. The chapters published here are not final words, but represent scholarly perspectives that reflect careful, ongoing research. We invite critique and elaboration of our work and anticipate that the dialogue will continue as participants come and go.

Kenneth Tobin and Ashraf Shady, New York, December, 2013

EILEEN PERMAN BAKER

1. BECOMING A SCIENCE TEACHER

Abstract In this chapter I recount my personal history as it relates both to the immigrant experience in contemporary American schools and to some of the challenges faced by students in the cogenerative dialogue I formed as a teacher-researcher in my classroom at a suburban junior high school on Long Island. After experiencing turmoil in schools in the Bronx during the 1960s and 1970s I found that my perspective of the society around me mediated the way my students, many children from immigrant families, approached their schooling. My gender and immigrant background made me empathetic to problems faced by students and teachers of science and math.

I am an immigrant, and being one has always given me a slightly different perspective on the society around me. Many of the students I have taught have also been immigrants or come from immigrant families. This is the story of one immigrant who came to teach others from backgrounds different from her own but whose experiences in an unfamiliar new world tie them in some common way to their teacher. All immigrants, both children and adults, face the challenge of determining how they will fit into their new society. They need to decide to what extent they will maintain the culture of their place of origin and how they will reconcile that with the new, American, mainstream culture. Sometimes, this can result in conflict between immigrant parents and their children as they clash over how to triangulate between their old and new environments in terms of cultural norms, mores, and self-identification. This, of course, has an effect on the way children from immigrant families approach their schooling. Even though the mainstream culture, which existed when I was growing up, has fragmented today and no longer provides a single model for my students to follow, as an immigrant, I have nonetheless faced some of these challenges myself.

In 1950 at the age of three, I emigrated from Germany to the United States. I was born in a displaced persons' camp where my parents, both Polish Holocaust survivors, spent five years awaiting entry to the United States. I received my primary and secondary education in the Bronx, New York, and attended college there as well. I majored in science and minored in education at Hunter College in the Bronx, which is now Lehman College. Following my college graduation, I became a science teacher at a junior high school in the Bronx and later at a high school in the same borough. Years later I taught at Suburban Junior High School on Long Island.

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In this chapter I briefly recount my personal history as it relates both to the immigrant experience in contemporary American schools and to some of the challenges the students in my cogen group face. Some of my students are native African Americans. In some ways, I believe that the African-American experience is analogous to the immigrant one. Their ethnicities and immigrant or non-immigrant status have played an important part in their level of success as students. In this chapter I also explain my experiences as an outsider—at least to some extent—and how my identity as a science teacher was formed during trying and often exciting times. The experience of being Black in a dominant White culture gives these different groups some common ground, but different ethnicities and the status of being immigrant or native born have played an important part in the level of success students from different backgrounds have achieved.

GROWING UP AS AN IMMIGRANT

As a teacher-researcher, I have found that I draw on many of the experiences I had in and out of the classroom, many of which relate to my immigrant past. My first language was Yiddish, but as a child many other languages were spoken in my home, including Polish, Russian, Czech, and German—languages my parents picked up as they survived the Holocaust in Europe. It was not until I started kindergarten that I began speaking English. Nonetheless, I was always a successful student and entered accelerated classes at an early age. As an only child, school provided me with most of my social activities. As an immigrant, I faced several challenges trying to fit in. I was not allowed to speak English at home because my parents wanted me to remember my immigrant roots. The problems I encountered while growing up have helped me to be more empathetic to my students. I found through conversations in our cogenerative dialogue (hereafter cogen) that I experienced much of what first and second-generation students still experience today in adjusting to life in the United States.

In the mid-1950s to the mid-1960s, I lived in the Crotona Park Section of the Bronx. The apartment building I lived in housed Italians, Irish, Puerto Ricans, and Jews. On the street all children hung out together, playing games, sitting on cars, annoying grown-ups, and riding bikes. However, when gatherings included adult family members, all children present were of the same ethnicity and background as the parents. We did have opportunities to understand each other's ethnicities, but only on the streets.

Wanting to fit in

Neighborhoods can lead to the development of increased social networks, subcultures, and groupings that expand capital (Pitts 2007). Evelyn Gonzalez (2004) argues that Bronx residents created social areas that were composed of a street, a social block, and a neighborhood where residents socialized with family members

and friends. The social networks that were created allowed new immigrants like myself to learn how to become part of mainstream society. I remember wanting very much to fit in with other children. Although my best friends were from families similar to mine (from Europe), I remember wanting approval from children of other backgrounds as well. I remember Chickie, whose family was from Puerto Rico but who had been born in the United States herself, making fun of my family's green ways. Among ourselves, the immigrants, we called ourselves greeners, meaning we were new. We were learning new culture in the United States, but we were still clinging to the culture of the old country. Even being born here did not preclude misunderstanding when your parents are immigrants. When I tried to dress the way Chickie recommended, my parents were appalled. No big gold jewelry for me. Chickie didn't understand the culture any more than I did. Although the parents of children like me had made the move to America, they were reluctant to let us explore the many cultures America had to offer us, because they did not understand them yet. I came to America when I was three years old, and therefore, I never spoke with an accent. I was White, so I was indistinguishable from the predominant groups of people in the neighborhood who were mostly White. As I grew older, I learned not to wear the immigrant-type clothes my mother picked out for me. In kindergarten and in the early elementary school years, I didn't feel comfortable with the mainstream, although I wanted to be part of it. As my attire became more up-to-date, I was more comfortable with my American peers. My parents, however, still wanted me to keep my immigrant roots. In class I fully embraced being an American. At home, I fully embraced being an immigrant. Even today I still only speak mamaloshen, Yiddish, with my mother. On the outside I appear totally American; on the inside I am still an immigrant.

This experience has relevance as it helped me to become a teacher who understood her students who were from immigrant-families. At the time I was acculturating, many people arriving in America left behind their old cultures and mixed together. They looked to join the American mainstream culture, which may have had little in common with the country from which they immigrated. Immigrants understood that some assimilation was necessary in order to gain resources such as jobs, schooling, and improved social status, but there were often struggles among immigrant parents and children as to the best way to maintain culture from the country from which they came while embracing mainstream American culture. As I mentioned previously, I experienced this need for balance with my parents. I see similarities with my current students. My Dominican student, Krystal, told her classmates that she had to be home after school everyday to help take care of her younger siblings. She also mentioned that her mother did not want her to stay at school because she didn't want her to have too many friends who were different than her. As I had, Krystal, too, needed to find balance.

During the 1950s as I was growing up in the Bronx, school did not prepare us very well to embrace different ethnicities. The point was to Americanize everyone. In our school at that time, there were very few Black children, perhaps 10 in a school

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of 1,000. If we interacted with them at all, it was only in school. We never played together in the streets. These Black children lived only a few blocks away from us but lived in a different neighborhood and within a different culture. There was, as I've noted above, very little interaction between neighborhoods.

This was during the period when a great internal migration was taking place. African Americans were moving from southern to northern cities, and Puerto Ricans were moving from Puerto Rico to the U.S. Most of this migration occurred from 1930 to 1965. The migration of Puerto Ricans was precipitated by economic distress in Puerto Rico. Nearly 100,000 Puerto Ricans settled in New York City by the 1950s (Franklin and Moss 1994). Many eventually moved to the Bronx where rent was more affordable. The neighborhoods were changing, but as a child I was not aware of it.

In the elementary school I attended, I remember there being only one Black boy and one Black girl in my class, which had about 30 students. I don't remember any Puerto Rican students there at all, although there were some in my neighborhood. From kindergarten to 6th grade, we were tracked according to reading level, and most students, including those in my class, stayed together for many years. Our progress from grade to grade together defined the boundaries of our social as well as our academic lives. The school was in a big building with seven grades (K-6). I remember lining up on the first floor of the building by class and the teachers coming to get us to bring us to our classrooms. We left the building in the same way. We all lined up on the first floor of the building at the end of the day and were dismissed from there by our teachers. On Wednesdays we had assemblies and had to wear red, white, and blue. We felt that we were important to our school and community.

In the school district on Long Island where I taught, the elementary school went from K-4, the middle school from 5-6, the junior high school from 7-8, and the high school from 9-12. The school district has many activities that help students feel important to the community as well as the school, but not all students are able to access these services to the same extent. Just as in academics, marginalized students often are not able to access the structures that are available to them. In my class only Torie took advantage of the sports program. The others did not participate in sports or in activities that involved them in the community outside of school. In the 4th grade I became an American citizen. I still remember the ceremony in Manhattan, saying the Pledge of Allegiance, and the certificate that I was issued saying that I was now an American citizen. At the ceremony the judge called all the children onto the auditorium platform. When I looked around, we were all shades, shapes, and sizes, all with smiles. I didn't talk about it with my schoolmates. My friends at school were all born in the United States and were automatically citizens. Either their parents or their grandparents were immigrants, but they were not. I didn't want to call attention to my situation. The experience remains in my memory for another reason. At that time, although I gained my citizenship, my mother did not. My father had become a citizen the year before me, but my mother was afraid to take the literacy tests required to become a citizen. Eventually, at the age of 90, my mother

finally became a citizen. We went together on a day that was set-aside for senior citizens at the Federal Courthouse in Manhattan. As I looked around at the people gathered there, I saw a panorama of cultures similar to the one that I remembered from so many decades before, but many of the people were in wheelchairs or on walkers. My mother, as did all the other potential citizens, had to pass the same literacy test she had been afraid of so many years ago. It was very crowded, and there were a lot of anxious faces. She passed with difficulty. My mother did not go to a citizenship ceremony but a few months later a certificate of citizenship was sent to her. I was as proud of her as I was of myself that day so many decades ago.

There is a connection between my mother's experience of becoming a citizen and that of my students' parents. My mother was afraid to navigate the bureaucracy just as immigrant parents are today when it comes to navigating the school system's bureaucracy. These immigrant parents usually do not come to school to speak to teachers or administrators, and, if they do, their children serve as their interpreters. Sometimes this embarrasses parents and children.

Housing patterns change the Bronx

The early 1960s was a pivotal time of change in the Bronx. I lived in the South Bronx when Co-Op City opened in the northern Bronx, near suburban Westchester County. In a few short years the racial and economic composition of public schools in the Bronx changed drastically. As African Americans and Puerto Ricans moved into the Bronx, White residents who could afford to move did. They moved to suburban areas such as White Plains and Long Island and to northern sections of the Bronx like Riverdale and Pelham Parkway. I moved to Pelham Parkway in 1962.

In *The Bronx*, Evelyn Gonzalez describes how the deterioration of the Bronx began. The Mitchell-Lama law in 1955 provided low-cost mortgages and tax incentives to developers to build middle-income housing. This was meant to help families earning less than \$10,000 a year who could not afford an apartment in the city. From 1955 on, the state subsidized housing for the middle class. Many of the original residents felt threatened by racial change and the slums that were spreading. However well intentioned Mitchell-Lama housing was a disaster for the Bronx. The co-ops that were built siphoned off White families from housing that was still in good shape. This left vacancies that were filled by poorer Blacks and Puerto Ricans who themselves were displaced or moving away from slums that were even worse. Gonzalez states that the best example of this was Co-Op City, which was built during the late 1960s. Its 35 buildings with 15,500 apartments encouraged many White Jewish residents to abandon the Grand Concourse neighborhood almost overnight. The Grand Concourse area was where I would begin my teaching career. As more minorities came into the neighborhoods, more Whites moved away.

Every mugging, whether rumored or true, became an incentive to leave. I can attest to this. It was the reason why my parents chose to move to the North Bronx at that time. We could not afford Co-Op City, so we moved into a public housing

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project that was mostly White in the Pelham Parkway section of the North Bronx. The Cross-Bronx Expressway also created problems for neighborhoods in the Bronx. It sliced through neighborhoods and destroyed blocks of apartment buildings. Public housing, urban renewal, and highways helped to create slums. Housing created under Mitchell-Lama increased the separation of the White middle class from those who were poorer and disadvantaged. There already had been some economic segregation, but when I was growing up all the ethnicities were living together. Even though we didn't have much contact with each other, we were all of similar economic means.

In addition, landlords and tenants abandoned, vandalized, and burned apartment buildings that had been fully occupied a few years before. The apartment buildings on the Grand Concourse itself were too good to abandon, and the residents there went from being mostly White and Jewish to mostly African American. The streets radiating from the Grand Concourse, however, they were narrow and had been closely packed, with large apartment buildings and few trees. On these streets there was abandonment and arson. Making the arson more possible were the installation of a less reliable fire alarm system and the shuttering of firehouses in places where they were most needed. A delayed fire response meant that fires increased in number and severity (Gonzalez 2004).

These were the streets that sent students to Taft High School, the school where I would find myself teaching in 1969. Previously, Bronx apartment buildings provided homes for families and profits for landlords. Now, however, Bronx landlords had apartment buildings with no tenants. Tenants were sleeping in their clothes with their shoes on, because there was so much arson. I spoke recently to a retired fireman friend who was working as a fireman in the Bronx at that time. He said that people could be seen walking through the streets with their belongings after a fire had forced them out of their building. In addition, some landlords cut down on maintenance, rented to undesirable tenants, collected whatever rents they could, and left.

Living conditions for many tenants in Bronx apartments became squalid. Many of the newcomers were poorer and less educated than former residents, and newly arrived Puerto Ricans often spoke little or no English. There was frustration and a feeling of helplessness among the new residents and the teachers in the affected communities (Urban and Unger 2006). Local businesses and stores went out of business or moved elsewhere. Heroin moved in and became the friend of too many.

JUNIOR HIGH PORTENDS THE FUTURE OF EDUCATION IN THE BRONX

I felt all of this on a personal level, as this change was occurring as I entered junior high school. I was accepted into an accelerated class at Herman Ridder Junior High School. I traveled on two buses to get there. This was at about the time that the demographics of the Bronx began to change because of White flight. Those who had reached the middle class began moving out of Crotona Park. During junior high, my classes were mostly White, while the rest of the school was Black or Puerto Rican. All the White kids stayed together. We never met the kids from the neighborhood

who were Black and Puerto Rican. I don't remember even talking to one student from these ethnic groups. We traveled in bunches through the halls, keeping together. It is interesting to note that when we walked together in bunches, it was accepted, but today at Suburban Junior High the faculty is very uncomfortable with this practice.

When I was in the accelerated track in junior high school, I experienced what would later happen to most of the South Bronx, where schools came to be made up mostly of Black and Puerto Rican students. White immigrant children of an earlier period, both first-generation and second-generation, had benefited from the opportunities that schools had provided, but Black and Puerto Rican students came into schools at a time when there was great turmoil in the society as well as in education. In addition, veteran teachers in schools were unprepared to deal with the diversity that the new minority students brought to the table. I remember that in junior high our teachers told us how grateful they were to have us as students. We reminded them of the way school had been before the White flight.

A special high school experience

I attended the Bronx High School of Science. Then, as they do today, students came from all the boroughs to attend this specialized school and similar ones in the city system. Entrance was and still is by exam. I attended Bronx Science because it was the only special school for which I qualified. When I went there, only one-third of any class was allowed to be female. Today more than half of the student population is female. At the time I went to Bronx Science, it was mainly White. Today, the school's demographics reflect the diversity of New York City as a whole, with dozens of ethnicities represented among its more than 2,600 students. Bronx Science was a place where students and faculty alike experienced the excitement of the motivated mind with a common goal of advancing the self and society. I got a wonderful education there. I wish that others could have had exposure to the same learning opportunities. After high school, I continued my education at Hunter College, where I graduated with a degree in biology and a teaching certificate. I chose a career in teaching because I wanted to help others. I chose a career in science education because I had accumulated so much knowledge at Bronx Science that I wanted to share.

The New York City teachers' strikes

After college I started teaching at a time that coincided with the end of the 1968 teachers' strikes. I was 20-years-old, female, White, and Jewish. The United Federation of Teachers (UFT), the nation's largest union, led a 14-day strike in 1967 and a 36-day series of strikes in 1968, which closed down the nation's largest public school system and threw the lives of one million students and their parents into chaos. The precipitating event that had started the longest strike in 1968 was the introduction of community control of local schools. A local school board in the

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mostly Black Brownsville section of Brooklyn began firing its mostly White, Jewish teaching staff. These firings prompted the United Federation of Teachers' strike. Both incidents stirred up racial animosity, particularly between Black parents and Jewish teachers. Members of the union were called racist for opposing the black community's quest for greater self-determination and control over the schools. Behind the decentralization effort was a desire to give minority communities a greater voice in the school system. The strike brought to a halt the city's attempt to decentralize the school system. Union contract protections against arbitrary dismissal were preserved; the teachers returned, and the threat of community control diminished. The Ocean Hill-Brownsville strikes of 1968 left an indelible mark on New York City.

The strike ended and students returned to school, but the issues raised by the strike—bigotry and the future of community control—remained to be sorted out. I was supposed to start teaching in September of 1968 but refused to cross picket lines to do so. When I talked to teachers at Taft High School after I started teaching there, they were haunted by comments they had heard hurled at them during the strikes. Teachers told me that they were called —white racist pigs, were asked “who’s going to protect you when the police leave?” and heard “you are the enemy of the people.”

I worked as a laboratory technician at New York University Medical Center until the strikes ended. The United Federation of Teachers comprised 55,000 of the city's 57,000 teachers. The union had wanted to close the schools down completely during the strike, but about 350,000 students were able to attend classes, either in schools that remained open with substitutes and teachers who crossed picket lines or in makeshift classrooms set up by parent initiatives. The strike was illegal under laws at that time, and Albert Shanker, the head of the U.F.T. served a jail term for sanctioning the strike. More than 7,500 union members violated union orders by teaching outside of the union-authorized schools. In many areas parents physically occupied their schools to make sure they stayed open (Kahlenberg 2007).

How the strike was relevant to my subsequent teaching experience

The teachers who found themselves caught up in the strike fell on two sides of the issue. The strikes made it apparent that there is no easy or safe middle ground. On one side were teachers who justly denounced the education taking place in many inner city schools in New York, which they felt programmed poor children for a life of adult poverty. On the other side members of one of the most progressive labor organizations in America, the United Federation of Teachers felt it necessary to assert principles of academic freedom and due process when professionals were dismissed from their posts. This was no simple conflict of right or wrong, but a fight between two rights. No matter which side the teachers involved took, they were educators who passionately believed that they were in the right place.

I finally took my place as a teacher at W. H. Taft High School in the Bronx in the immediate aftermath of the strikes. This assignment had a huge impact on the

formation of my identity as a science teacher. I realized very quickly that I would have to choose carefully which teachers with whom to align myself, as incredible acrimony between those teachers who had crossed picket lines and those who had participated in the strikes lingered after the strike.

Because I had postponed teaching until the strikes were over, I chose sides with those who didn't cross the picket lines, but I tried to be friendly and professional with all. The wounds never healed while I was at Taft. Colleagues who had previously been friends for decades could no longer tolerate each other's presence, and people on both sides tried to influence new teachers by denouncing their former friends.

New York City was racially polarized (Kahlenberg 2007). During the strike many students were not being educated, but many students who attended school after the strikes were not receiving a useful education. The parent-teacher relationship had been transformed from one that seemed to represent an alliance between parents and teachers to one of bitter antagonism. After the strike inadequate schools were still the same inadequate schools, and hostility between Blacks and Whites and between parents and teachers were evident. When the strike was over, ideally those who were on different sides of the immediate issue but who shared common values and concerns should have once more come together. Without that reconciliation the only victors of the situation would be backlash and poverty. Unfortunately, when I started teaching at Taft in February of 1969 (three months after the strike had ended), I mainly experienced anger, backlash, and poverty. The only glimmer of hope was that out of the chaos some opportunities had developed for new teachers to expand their agency, utilize structures, and establish their own identities as science teachers by trying, inventing, and implementing a new curriculum.

My first day at Taft and beyond

My first day as a science teacher at Taft was not what I had expected. I had done my student teaching at my alma mater, Bronx Science, so I was prepared to deal with science questions, not questions of discipline. I had no orientation because I started mid-year. My first-period class on the first day of school had 40 students, and there were not enough seats. After students filled the available seats, others sat on the heaters. During my first break I went into the department office. There the science chairman mainly advised me to lock my door while I was teaching, as outsiders—mostly drug dealers looking to make sales—were often in the building. The rest of my classes that day were equally crowded, and I remember leaving school seriously considering not returning.

Of course, I did return the next day and for four years after that. Things did not necessarily get any better, however. Violence on the streets created by the change in the local neighborhoods had spilled into the schools, as had an epidemic of drugs. Outside, the streets were in chaos. Chaos manifested itself in our school as well. We had no guards, and other teachers as well as the department chairman advised me not to send students to the bathroom, because opening my door would expose me, and my

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students to possible intruders. By talking to other new teachers, however, I realized that we could help our students and ourselves by helping each other. We were in the halls between classes and also when we weren't teaching because the school hoped that the teachers' presence would reduce the likelihood of intruders approaching students. We volunteered to spend time with the students in the lunchroom as well. This help was meager, but it was all we thought of at the time. Veteran teachers at Taft bemoaned how good the school had been and how the new students (Blacks and Puerto Ricans) had spoiled it. According to the teachers with whom I spoke, this school had been one of the top schools in the Bronx. Discipline had never been a problem, and the veteran teachers just wrung their hands in despair as they saw themselves losing control of the students. Although these veteran teachers had excellent reputations and thought of themselves as excellent teachers, they did not have success in this new environment.

I still remember to this day how disillusioned I felt as I listened to the veterans as I was trying to form my own identity as a science teacher. They were, unfortunately, part of the problem, not part of a solution. Wesley Pitts (2007) suggests that these experienced teachers may have felt that their core identities as science teachers were being challenged when they were asked to find alternative ways to teach this new population of students effectively. This, Pitts notes, might have elicited a culture of resistance. From my observation, I feel that this may well have been true. Pitts goes further and quotes Richard Valencia (1997, p.8), many adults who develop educational policies for students attribute school failure to students and claim success is due to their own efforts.

The culture of activism nurtured my own will to change my teaching practices

As neighborhoods changed, so did the composition of the schools. Veteran teachers in these schools were unprepared to deal with the new students. It would take several years and a new crop of teachers even to begin to facilitate change. Taft High School became a reflection of its neighborhood. It had been a school of mostly White students and White teachers and became a school of White teachers instructing a student body composed of mostly Puerto Ricans and African Americans. This happened within a span of a few years in the late 60s and early 70s. As owners were occupying Co-Op City, I began teaching in a school that also pitted culture against culture (that of White middle class teachers against that of African American and Puerto Rican students).

In the fall of 1969, a new crop of activists entered the New York City school system as teachers. The Vietnam War had increased the number of males particularly White men entering the teaching work force in the Bronx. These activists were mainly young men seeking a way out of the draft—one way to be released from service in Vietnam was to serve as a teacher in a disadvantaged, underserved urban area (Fosburgh 1969). Many of the men who came to these urban schools were liberal-minded, did not have roots in or prior allegiances to New York, and wanted

to make a difference. Black men were less likely to take advantage of this option because on average they were less able to pay for college (a key requirement to becoming a teacher). Many of the White males who took this option were from the Midwest and ended up teaching in rural and urban communities of color. One of the most pressing problems these activist teachers tried to address was how to reach out to Black students, whom the school system had been failing in disproportionate numbers.

The new teachers were excited to be there and hoped to make changes in the culture of the school. By talking to other new teachers, however, I realized that we could help our students and ourselves by helping each other. We were already in the halls between classes and also when we weren't teaching, and we volunteered to spend time with the students in the lunchroom as well. Here in this school that was changing and we saw an opportunity to create a community at the same time that we forged identities as science teachers. We wanted to create new structures within the school, and we tried to form social networks with other new teachers with similar ideas. We had some opportunities, because the veteran teachers (who in an ideal world should have been helping us) just wanted to be left alone. They were out the door when the bell rang at the end of the day.

New curriculum is invited

Because of the declining academic performance in the school, teachers and administrators were open to any projects that might bring some change. I got a National Science Foundation grant the first summer I was at Taft to attend a two-week seminar at Stanford University on new ways to teach science to disadvantaged students. After my difficult first year the summer at Stanford reinvigorated me and taught me many things that I have subsequently used in my classroom. First and foremost, one of the lecturers at that Stanford teaching seminar, Harry K. Wong, expressed the firm belief that all children could learn and that a teacher's job is to get them interested. He demonstrated some novel hands-on experiments at which students could not fail. I returned with *Ideas and Investigations in Science* (Wong and Dolmatz 1971), which made fruitful use of these sorts of labs to teach science. My students loved cooperative learning, and I tried to encourage others in my school to pursue the program. With the support of my chairperson, soon the whole department was following this hands-on-teaching science program in the non-Regents classes.

Another way that the new teachers tried to make a difference was by adding to the curriculum. The principal at Taft also allowed another teacher and me to develop and teach a psychology class for seniors. We planned to cover college-level psychology material, trusting that the inherent interest and novelty of the topic as well as our rapport with the students would enable the class to be a success. James Gee (2004) could easily have been talking directly to the Taft High School staff of 1969 when he asked, what is it about school that manages to transform children who are good at learning—regardless of their economic and cultural differences, into children who are

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not good at learning, if they are poor or members of certain minority groups? It was widely assumed by the administration and other faculty that our psychology class would be a failure. How could our students possibly read college-level articles in the field of psychology? However, our students proved them wrong, engaging with and mastering the material. The class, an elective with prerequisites and grade-point-average requirements, ran for many years as a permanent part of the Taft curriculum and was always oversubscribed.

Students came back year after year to tell us how meaningful the experience had been for them. The students, who were Black and Hispanic, were able to achieve the grade prerequisites in part because they were motivated to join the psychology class. The students saw this as an opportunity to learn in a distraction-free environment. When the opportunity presented itself, they took it and learned.

It was a turbulent time for the Bronx and for its schools. Teachers were unprepared for the changes that were taking place each day. The district where I worked in those years still remains one of the poorest in New York City. Although I left teaching in the Bronx in 1973, I kept in touch with my faculty colleagues for many years. Teachers who had been present during the White flight—the exodus of many White families from places where people of color were moving in—changed schools or retired. The school I had attended was turned into several mini-schools, which, unfortunately, to this day still rank low in the academic standings of the New York City school system.

The importance of the teacher-student alliance

Producing and sustaining solidarity involves continuous effort, not just from the designated leaders but also from the collective (Turner 2002). When I was at Taft, I formed alliances with Black female students, but I never learned their culture, nor did they learn about mine. At that time we were close in age; I was in my early twenties and they were in their late teens. I met some of these students at museums in New York City. We arrived separately, met at an agreed upon place, and we talked as we walked together. Then we went our separate ways.

The culture of urban neighborhoods is often not recognized by teachers who have lived their lives in different types of neighborhoods. In such circumstances the students' cultural capital may be viewed from a deficit perspective. Teachers may want to extinguish the urban culture because they believe that this culture may prevent students from learning science. At that time I felt that way too. It wasn't until 30 years later when I began using cogenerated dialogues (cogen) (Tobin 2014) that I realized there are better ways to understand my students and to help them understand me.

At Taft I started to understand that the only way for students to do science was to do what was familiar to them in their outside lives. They needed to be able to use their cultural capital to produce science culture. They could learn only if structures were in place that allowed them to learn. As a teacher, I needed to provide them with

those structures and to be adaptive. I needed to teach in ways that were appropriate to the students in the classroom. To be an effective teacher I needed my students to have my back, and I needed to have theirs. Using cogen years later, I was able to give back and have their backs.

At Taft during laboratory experiments, I spent a few minutes talking about students' home lives as we worked on science experiments and I walked around the room looking at the students, offering encouragement or asking questions about the experiment. I would overhear comments they were making to each other and would respond if it sounded as if I knew something about what they were discussing. For example, if I heard them talking about a rock and roll song I recognized, I would say I knew the song as well. This led to discussions about the kinds of song I liked and the kinds of song they liked. The Taft students participated in setting the curriculum for my elective courses, and they were very active during hands-on experiments. Looking for possible ways to improve science learning for my students helped form my identity as a science teacher. I realized that laboratory activities offered an excellent way for the goals of the individual and the collective to be achieved. I would continue to focus on laboratory experiments as a way to transform science education for marginalized students. I did collaborative work and had conversations with students that anticipated the research I did later. I was using some of the elements of cogen at Taft. This sort of collaboration between teacher and student is central to my research and to cogen.

THE WAR ON POVERTY LEADS TO A DEFICIT PERSPECTIVE

Responding to a racially and economically divided country in the 1960s, President Lyndon Johnson called for a national War on Poverty. Johnson believed that the poor would lift themselves out of poverty by acquiring the skills demanded by a complex society. He called this the Great Society. One of the places where the Great Society would be built would be in the classrooms of the United States. As a result of the Federal effort, Taft created an annex for college-bound students in 1970. The annex housed students who had maintained grades that would qualify them for college admissions and students who were interested in improving their grades. It had its own set of teachers, so it was similar to what is now termed a mini-school. It lasted a few years, but the budget crisis that affected New York City in the early 1970s brought about its demise.

For all its good intentions the Great Society also led to pedagogical practices across the United States firmly rooted in a discourse of cultural deprivation (Ladson-Billings 1999). This perspective explained the disproportionate academic problems among low-status students as largely being due to pathologies or deficits in their sociocultural background (Valencia 1986). At Taft those teachers who were interested in helping these marginalized students bought into this argument. These deficit-framed pedagogical practices have proven unsuccessful. I have found in my teaching experience that students who don't conform to the dominant culture are often seen as

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in need of fixing and teachers may try to replace behaviors that are not mainstream with others that are. I often tried to alter student behaviors. I recommended ways for them to enter the class quietly, talk quietly, and look me in the eye. After having conducted my research, I now realize I was trying to have them behave according to the rules of the dominant culture.

My career on Long Island begins

In 2002 I began the PhD program at CUNY Graduate Center. When looking for a topic for my dissertation I decided to do research on my school on Long Island because Long Island continues to become more racially and culturally diverse. In Suburban School District as well as in others on Long Island, rapid immigration is clearly the predominant cause of this increasing diversity. Since 1990, the Whites have declined from 84% to 72% of the population, and since 2005 the percentages of the population identifying themselves as Black, Hispanic, or Asian has edged up slightly. Hispanics are both the largest and the most rapidly growing minority group, having increased from 6% to nearly 13% since 1990. The Black population increased modestly, growing from 7% to 9% (Long Island Index 2005), but fully one-quarter of the Black residents of Long Island were born overseas (Long Island Index 2005). These data mirror both national and regional trends in terms of the general movement toward greater diversity.

Thirty-five percent of the students got free breakfast in our district at that time, and I had noticed as I stood outside my classroom that many of the students getting free breakfasts were Black. They passed by my room as I monitored the hallway in the morning before school began. I also noticed that teachers who monitored the halls constantly argued with and reprimanded those students as they passed on their way to the cafeteria. The teachers expected students to pass through the halls talking quietly to each other. Some students did pass through the halls quietly. These were mostly the White, Asian, and Hispanic students. In contrast, many Black students talked animatedly and often called out to each other across the hallways. The students were loud and traveled in groups. The teachers in this hallway were White, whereas most or all of the students passing were Black. Some teachers had a confrontational stance towards those students, and many times confrontations did occur. Female students were just as ready as the male students to enter a confrontation with a teacher or with each other. I also witnessed that Black students tended to walk in groups and to stay together as a group.

I witnessed an incident that occurred in the hallway involving one of the students and a teacher in the hallway in front of his room during the time students were passing from one class to another. After this incident the student was very affected and did not want to begin her next class. I feel that if a teacher reprimands a student before she enters the classroom, even if the teacher were not the student's instructor, the student will be less willing to engage in the classroom. This type of incident was common in my school.

Teacher observation as a structure

In 2006 during my yearly observation, I received an unsatisfactory rating for class control, because I did not shut down student behaviors like walking around the classroom, interacting socially with peers, and rhythmically tapping on desks. These are similar to the practices that Elmesky reported in 2003, which were often shut down by teachers. My intuition and experience had led me to the same conclusions that Elmesky reached. The principal summoned me to a meeting and asked me to explain why these practices were not evidence of poor class control. I did not show Elmesky's work, but I pointed out that avoiding shutdowns was a key component of the teaching methodology my research was examining. Pervasive shutdowns, I noted, suppressed important components of the cultural capital of my students, leading to negative emotions, frustration, and ultimately low interest in science on their parts. Even after that meeting and with the administration ostensibly expressing support for my research goals and methodologies, administrators watched me closely for several weeks thereafter. Had I not been a tenured teacher with an otherwise unblemished record, I might have been forced by intimidation from school administrators to discontinue my methodology. This lack of administrative support made it even more important for me to disseminate my findings to other science educators. Eventually, administrators at my school, as well as other teachers, came on board expressing the importance of this methodology, although they did not follow it themselves.

Teaching methods today

Teachers today in science classes across the country are still unprepared when it comes to teaching minority students. They still teach from a deficit perspective rather than by engaging with the cultures of their students. Shutdown strategies are still all too common in science classrooms, and, misunderstanding their students, veteran teachers as well as new teachers think that students are choosing to fail their classes. The use of cogen played an important part in my pedagogy and ultimately resulted in improved science learning in my classroom. The students in my classroom came from a diverse range of ethnic, racial, and socioeconomic backgrounds. My classroom provided a structure for whole-class interactions and offered opportunities for inclusion for all members of the class. Students who participated in conversations acquired more energy and self-confidence and became fully engaged in class lessons.

I found that solidarity emerges gradually and involves the exchange of social capital, cultural capital, and respect, a form of symbolic capital. Goals in cogen create solidarity grounded with a respect for difference and willingness to learn from others. Cogen became a tool to build community in my science class. Students accomplished their own goals as well as the goals of the collective. As a teacher-researcher, I found ways that cogen helped to increase student engagement. There was evidence of a shared mood and entrainment as the individuals in the group synchronized their practices and shared the resources they needed to progress with

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the lesson. A community of learners formed and contributed to a positive learning environment. I hoped to find that students in my cogen group were successful in my science class and advanced to AP science classes at the local high school, but this did turn out to be the case.

As a teacher-researcher, I was able to examine the talk in my cogen and in my classroom. I observed alignment and synchrony. I looked for rhythmic patterns of gestures, rocking movements of legs or heads, and stressed syllables that were produced and reproduced in synchrony by members across the classroom. Because the conversations and actions associated with a science lesson were important to me as a teacher-researcher, I used primary data from the videotapes of classroom interactions to produce the transcripts that I then analyzed. When my students communicated in conversation they varied their speaking to communicate subtle cues like energy by being loud, or spontaneity in their expressions. These cues are open to interpretation. Video and audiotapes allowed me to understand the cues accurately (often replaying the tapes over and over to get my interpretation right).

As an immigrant, I have seen that my perspective of the society around me has an effect on the way my students, children from immigrant families, approach their schooling. Ethnicity is a complex and changing notion, one that I have dealt with throughout my teaching career. My current students come from diverse cultures. Their ethnicities, complex and dynamic, and their varied experiences in school helped forge their identities.

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ASHRAF SHADY

2. GLOBALIZATION, IMMIGRATION AND IDENTITY FORMATION|REFORMATION

Abstract In this chapter, I explore the different macro structures that mediate the identities of immigrant educators, such as, globalization, immigration, and religious affiliation. I use auto/biography and auto/ethnography genres as a reflexive practice to explicate individual as well as communal biases. The theoretical framework for this chapter is based on the work of (Roth and Tobin 2007) for approaching identity and its relation to human experiences. This standpoint contends that a person has a core identity that undergoes a temporal progression that is articulated in autobiographical narratives of self. This standpoint allows me to understand the relationship between identity, activity, and auto/biography. In this perspective, events in our lives may provide us with means to unravel the complexity of ourselves differently, leading to transforming our understanding of the self with time.

COMING TO AMERICA

Globalization, and cultural appropriation

Will millions of immigrants necessitate the implementation of new rules and customs on the rest of the United States? How do you manage diversity in a globalized environment? Questions such as these endorse the current debate about globalization and immigration. Suarez-Orozco and Qin-Hilliard (2004) argue that globalization engenders complexity that has challenged the geopolitical boundaries of the nineteenth and twentieth century nation-states' doctrine of defined cultural identities of these nations. Although globalization very often used to refer to such incorporation of nationalized economies through free trade, migration, and the spread of fiscal, technical, and sociocultural artifacts, it is generating more elaborate demographic profiles, economic realities, and political processes that are shaping and reshaping our sense making process, constructing new norms.

Globalization seems to be implicated in almost all aspects of social life. Recently, I watched an Islamic TV station called "Iqraa," which means read in Arabic (that was the first command the prophet Mohamed received from the angel Gabriel), the announcer invoked the lyrics of the Irish singer Sinead O'Conner "Nothing compares to you" to illustrate his love for God, which is Allah in Arabic. I found this cultural appropriation to be an example of how globalization penetrated many facets of life including the traditionally impermeable religious boundaries. The announcer's

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understanding of the English Language and popular culture in the Arab world equipped him to use western cultural artifacts as a transformational force that could be harnessed to deliver his message. His global approach to religion is contradicted by the long-established Islamic view of globalization, which is looked upon as a threat to many century long traditions, religious identities, and authority structures. Traditional Islamic scholars resent the notion of having to adopt a different value system from their own, and feel that globalization is a proxy for Americanization, imperialism, and neocolonization.

The criticism of globalization does not confine itself to circles of traditional Islamists, but extends to national economic policies, and grass root activists. In his World Bank Presidential Fellows Lecture, Kumi Naidoo (2003) argued that globalization has exacerbated fiscal inequality between the rich and the poor, to the extent that it appears to be driven by the advantaged at the expense of the underprivileged. The unrelenting glorification of so-called 'free-trade' in fact masks a set of double standards that protect certain markets in wealthy countries and deny poor and developing countries the chance to benefit from the most promising segments of their own economies. This economic disparity has produced social inequality, segregating the implicated societies into different classes.

Globalization and immigration trends

The recent trends of migration around the world seem to be driven partly by economic and social inequities. Immigration patterns have changed the demographics of host nations, producing a new set of problems, namely, how to deal with the cultural, and ethnic differences produced by immigration. According to the U.S. Census Bureau (2005), the nation's minority population totaled 98 million, or 33%, of the country's total of 296.4 million. Census Bureau Director Louis Kincannon states, "These mid-decade numbers provide further evidence of the increasing diversity of our nation's population." Hispanics continue to be the largest minority group at (42.7 million) with a 3% increase in population from July 1, 2004 to July 1, 2005; they are the fastest-growing group. The second largest minority group was blacks (39.7 million), followed by Asians (14.4 million), American Indians and Alaska's natives (4.5 million), and native Hawaiians and other Pacific islanders (990,000). Managing such diversity is becoming one of the greatest challenges to multicultural countries. Children growing up in these and other settings are more likely than in any previous generation in human history to face a life of working, networking, living with others from different national, linguistic, religious, and racial backgrounds.

As an Egyptian immigrant educator, I experienced firsthand how unprepared I was to meet the new challenges dictated by globalization and the understated identity transformations that immigrants go through by moving to a different nation. I discovered that contrary to the popular myth of America being the land of opportunity for immigrants, new settlers have never been particularly welcomed in the United States. Americans have always tended to romanticize the settlers of their

grandparents' generation while casting a suspicious eye on modern-day newcomers. In the first decades of the 19th century descendants of Northern European immigrants resisted the arrival of Southern and Eastern Europeans and today the descendants of those once unwanted Irish, Italians, Greeks, and Poles are deeply distrustful of current immigrants from Latin America, Africa, and the Middle East.

In order to be accepted in their new land immigrants are forced to go through an assimilation process that includes the shaping/reshaping of their core identity, which I view as a fundamental self, strongly defended and unwavering. It is closer to personal distinctiveness and defines who I am as an individual. Core identity does not stand in seclusion from other social factors. It is entangled in structured social relationships governed by reciprocity, which is the underlying base of well thought-out dialectical relationships and what we elect as social bonds. The reconstruction of identity for immigrants takes place at both the conscious as well as the unconscious levels by the state authority, initially as immigrants land at the entry port, and later on by societal norms. The socioeconomic backgrounds of the immigrants, personal expectations, self-motivation, and their goals in life complicate such restructuring of identity.

Landing in New York City

My motivation for immigrating to the United States was quite unsophisticated; I wanted to have a better life. In Egypt the rise of capitalism in the 1980s saw the diminishing of the middle class and the rise of two tiers in the country – the very rich, a status often gained through questionable business practices and the very poor, with an attitude of every man for himself. This shift in social class creation was accompanied with the promotion of luxury goods as evidence of successful life style, which in turn prompted greed at an unprecedented level. This structure provided the groundwork for the creation of a police state to protect social inequality under the guise of protecting the stability and collective good over individual freedom. Before landing in New York City I read the American constitution at least couple of times. This was my new land by choice. The Land I chose to live in over my own. I still recall how I felt as my plane was about to land in New York City. As I looked from the plane's window and saw the statue of liberty, I started reciting Emma Lazarus's poem (1883) entitled "The New Colossus," which is inscribed on the pedestal of the Statue of Liberty, the poem tells of the invitation extended to those wanting to make the U.S. their home. "...Give me your tired, your poor, your huddled masses yearning to breathe free..."

My romantic vision of immigrating to the United States came to a crushing halt as I landed at JFK airport. The visa officer, a white burly guy asked me, "why are you here?" Instead of reciting the poem again, I told him the second best answer, which was I am here visit my uncle, and attend Graduate school. He asked me next what my name was, so I told him, "Mohamed Ashraf, my father's name is Anis Oncy, and my grandfather's name is Ali Shady." He said, "I did not ask you to write an essay, pick

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a maximum of three names, first, middle, and last.” I looked at him with surprise, and said, “O.K., Mohamed Anis Ali.” A decision I ended up regretting, because of negative perceptions that many in the American society tend to have toward names that have religious or ethnic connotations that differ from Judeo-Christian norms.

MY EXPERIENCE AS A SCIENCE TEACHER IN NEW YORK CITY

Teaching in East Flatbush

Later on, I experienced first hand, how a name, physical appearance, or national origin can be grounds for dismissal from a job, schooling and other opportunities. In an interview for a position as a science teacher in a middle school in East Flatbush, NY, the principal initially refused to hire me. Two full weeks into the school year she called to offer me the teaching position when she could not find another science teacher who was willing to work in the school. Later on, as she left the school for a better position, she mentioned that she was initially skeptical of hiring me because of her perception of foreign trained teachers. She thought they were poorly educated, could not handle classroom management matters, and expected that just because they were the teachers they should receive the students’ respect. She followed this by saying, “here in the United States the teacher has to earn the students’ respect.” Her comment left me with the profound impression that I was going to have to work twice as hard as any other teacher to be accepted in the school system, then maybe, I would be able to change the perception about foreign born and trained teachers.

My first teaching job in New York City

I landed my first teaching job at East Flatbush middle school in the early nineties (Proper names are pseudonyms unless otherwise noted). The school had an enrollment of 252 students distributed among three grades 6th, 7th, and 8th grade. The percentage of the students who achieved proficiency on the English Language Arts Exam (ELA) in the eighth grade was about 9%, and the percentage of the students who achieved proficiency on the Mathematics exam was about 20%. About 95% of the students came from conditions of poverty, based on free lunch designations. The demographic of the school was about 90% blacks (under this category fell the African American students, and the Caribbean students of African origin, such as, Jamaicans, and Trinidadians), 9% Latinos, and 1% white. In contrast, to the racial demographics of the students in the school, the racial breakdown of teachers was about 90% white, and the rest were black, and Latinos. I was the only Egyptian teacher in the school, but in terms of ethnicity, I classified myself as African American, since Egypt is in Africa, and I immigrated to America. Neither the white nor the black teachers accepted me as one of them despite my “biracial” lineage – my father was black and my mother was white. The teachers did not inscribe a racial label on me because there was not a clear correlation between my biracial background and my physical

features. Their definition of racial identity was influenced by the social construction of race and to a larger extent by the experience of colonization.

This “othering” process did not limit itself to the staff but extended to the students as well. They asked me if I was black how come I look Hispanic (they correlated race, with phenotype); and when I told them about my background they were puzzled. The variance of my cultural background placed them in an uncomfortable position – they did not know what to expect of me culturally or educationally. Based on my conversations with the students I found out that they ascribed white teachers with all the stereotypical privileges that come along with such racial inscriptions. For example, the students assumed that all white teachers lived in houses with big gardens and two-car garages. In contrast, the students assumed that African American or Caribbean teachers (i.e., black teachers – based on their skin color) were struggling economically and experiencing the same oppressive circumstances as the students’ parents. However, the students’ views were distorted as far as what actually was the case – most of the black teachers lived in the same neighborhoods as their white colleagues (Long Island), and some of them were more affluent than their white counterparts.

My students felt deep mistrust of the educational system. They felt that it ill-prepared them to achieve well on standardized tests in the elementary level, and when they got to junior high they were blamed for their presumed lack of efforts. Lackluster performance on standardized tests ended-up limiting the students’ opportunities of attending schools of their choice, and instead they had to go to their neighborhood school, which most students viewed unfavorably based on my conversations with them. Most students at this school scored very low on high stakes citywide tests for English Language Arts and Mathematics. Unfortunately many students took out their frustration on me. I was easy prey. With no back up from my colleagues or the administration, the students showed me their disrespect by refusing to listen to my instructions. Students often walked out of the room when they felt like it, and refused to do class work, take exams, and hand-in their homework.

At the end of the first quarter I was asked to assign a grade for the marking period, and without hesitation I failed them all. When the students received their report cards they were shocked. They ran to the assistant principal, who in turn came to me with an angry look on her face saying, “what am I supposed to tell the parents?” I told her to tell them the truth. The children refused to do the work although I warned them more than once. Furthermore, I tried to contact the parents but the kids answered my phone calls instead, pretending to be their parents. I sent notices home requesting conferences with parents but I got no response. I was trying to tell her how helpless I felt in her school, but she refused to listen. She asked me to change the grades and pass all the kids. At that point I felt that maybe this should not be my career. I told her, she is the boss, and if she wanted to pass the children she should do it herself. She proceeded to do as she had instructed me to do and passed all the kids. Her action sent a clear message to the students, which is: it does not matter what you do in my classroom; you will pass. As I reflect back on this experience I realize that I

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was mistaken in assuming that education is about doing the class work, passing the exams, and handing in the homework. My previous teaching experiences in Egypt became reference points by which I judged my students in East Flatbush, NY.

The role of my prior experience

Past and present transactions, and the environment in which these transactions take place construct an individual's identity. The articulation of these experiences through an autobiographic framework helped me re-examine my cultural practices and understand the factors that shaped my identity. For example, it became clear that as a teacher my past experiences contributed to my current practices. The challenge with being a multicultural teacher who had to prove his educational equivalence to his peers was compounded with my formerly held Cartesian view of the "appropriate way to teach science." I only accepted verifiable logic and facts. By moving to New York City one would expect through professional development and my interactions with colleagues and students that I would have changed my teaching methods. Despite diverse experiences and many failures from which I could learn, I remained steadfast in regard to my tried and tested teaching practices and associated schemas.

Denying the shifting world around me was my way of asserting my core identity, which was correlated to my view of myself as a competent science teacher. Believing in science became more like a religious affiliation than a topic that is constantly being constructed and reconstructed by the views of the participating stakeholders. I felt that the reliability and the presumed neutrality component of the scientific procedure would ensure its impartiality and lead to a more socially equitable world. I felt that I could assess teaching and learning in my classroom by focusing only on how successful my students were in taking pencil and paper tests. I have to admit that I did not take into account the impact of emotions, intrinsic motivations, cultural background, and interests in shaping the students' prospects of succeeding in the educational system or in life in general. In my mind these constructs were not quantifiable. My ontology was constructed by sociohistorical interactions and teaching experiences in Egypt. I taught chemistry to the undergraduate students at the American University in Cairo in a teacher-directed method where my students looked upon me as a knowledge transmitter.

THE NOTION OF MERITOCRACY AND ITS IMPACT ON MACRO, MESO, AND
MICRO TRANSACTIONS

I taught science the way I learned it – as a neutral activity. I discounted my students' emotions as distractions rather than an essential component of developing a successful learning environment. My teaching methods discounted my students' socioeconomic status as well as their prior experiences. I assumed that every student had his or her own room at home to study in or at least s/he would share such a room with a sibling. Also, I assumed that students having trouble in understanding any of

the topics would ask their parents. Unconsciously I projected my lived experiences on their reality, constructing a mirage that I ended up chasing alone. Little did I know that most of my students lived with their grandparents or were raised by single mothers in very crowded apartments. Their parents or guardians were caught up in searching for life's basic necessities. I merely attributed the seeming lack of success of some students to lack of effort on their part.

I adopted meritocracy as an evaluative tool to judge my students' performance, which could be defined as a communal structure that provides opportunities and advantages to individuals based on their abilities rather than means, or social precedence. I was not the only individual who believed in meritocracy as the foundation for successful educational outcomes, so many conservative politicians, teachers, and even parents attribute the children's low performance on standardized tests to not putting in enough effort.

This is a perfect example of how macro structures such as meritocracy could permeate into different social settings such as the classroom, the school, home, and the street. The advocates for meritocracy tend to ignore the role of the collective in structuring the individual's success and failure. This is likely because acknowledging that the society has a responsibility towards its citizens would require subsequent actions at the legislative end that politicians might not be willing to take. It serves them well to place the individual, and the collective in a dichotomous relationship. Their underlying argument is if accomplishments were based on an individual's efforts it would make sense that failure must be an individual's responsibility as well. Another commonly held opinion among the meritocrats is that the children do not attain the specified standards because their parents failed to instill the importance of working hard as a moral value. In other words the parents are the ones to be blamed for the students' poor academic performance.

My lack of understanding for my students' diverse cultural and socioeconomic backgrounds produced a classroom saturated with negative emotional energy. I inadvertently pushed their wrong emotional buttons by constantly reminding them that they were not meeting the educational standards. Turner (2002) argues that if an individual receives an indication of practices not being accepted as appropriate, their ego activates defensive mechanisms that are used to manage associated negative emotions. If defensive mechanisms are routinely set in motion, their egos build self-protective systems to preserve identity. These mechanisms change the emotional valences and hence the flow of transactions among the participating stakeholders. Whether these emotional dynamics become persistent and long term or only temporarily breach the flow of transactions, individuals learn how to function along three dimensions – blocking students': abilities to meet their needs; capacities to manage negative feelings; and abilities to sustain stable identities.

My views of the inherent factors behind my students' failure to achieve success on standardized tests were deceiving, and one-dimensional. They were laden with deficit perspectives of the students that I was supposed to help. My views were saturated by my conviction in the determinism of macro structures such as social

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class on structuring success and failure in the classroom. I did not look at my black students and identify race and ethnicity as factors that might have shaped their views in life. I thought that the origin of their problems could be attributed to their social class. Consequently, my students were exposed to horizontal oppression that came from projecting my lived experiences on them, as well as vertical oppression from macro structures such as, meritocracy, and socioeconomic status.

Colonization, race, and social class

I had certain assumptions that were reconciled by my life in Egypt; despite my biracial lineage, growing up I never heard my mother or anyone else in my immediate surroundings mention the color of my father's skin in any context. This background definitely influenced my view of race and class as a teacher in the United States, and as a researcher later on. On the other hand, in Egypt the society is deeply entrenched with British class-consciousness, where social class mediates a person's chances in life, determines largely one's chances of getting a good paying job, and even the chances of getting married within a certain class. To readily understand the complexity of my experiences with race and social class, my black students in the affluent district of Roslyn, Long Island had very little in common with my black students in East Flatbush. They attended the *Quaker Academy*, which is one of the most exclusive private schools on Long Island. They took classical piano lessons and during the summer vacation they traveled to Europe. I am sure that they experienced racism at a certain level but its negative impact on them was far less severe than its impact on my poor black students in East Flatbush. Their parents understood how the system functions and taught their kids how to succeed as minorities in a society governed by a white majority.

At the beginning of the twentieth century Du Bois (1903) announced that the color line would define the social agenda of the United States. Since then that line has become increasingly fluid, both politically and culturally. According to United States Census Bureau: 2000 Population Survey data, states like Texas are expected to see significant change in the Hispanic demographics by the year 2040 when Hispanics will comprise the majority (around 59% of the population). These changes in the demographics will represent a challenge to the status quo. As individuals attempt to appropriate resources based on voting tallies and educational attainment, social class is bound to gain distinction along with racial identity.

In American society there is a discursive mechanism that hinders the discussion of the role of social class as a categorical representation. The fear of being charged with "racism" or with "blaming the victims" represents a deterrent to most liberal scholars to study the decline of race as the sole stratifying social phenomena and the rise of social class as a salient category in the United States. With the exception of some authors who were deemed to be "politically correct leftist" such as Lani Guinier, the research field has been left to the more traditional researchers, who argue that the problems associated with minorities in terms of having a large subpopulation

of low-income families and whose culture stands in contrast with the culture of the general population is a struggle of value systems.

Contrary to this belief, Guinier (2007) contends that race has been used as a replacement for social class in the United States, because social class is an obscured structure, while race is quite discernible. Although her argument situates race and social class in a dichotomous relationship it provides a theoretical foundation for the current stratification among minorities who share the same racial background.

Like Guinier, the sociologist William J. Wilson (1980) argues for the role of social class among African Americans in his book *The Declining Significance of Race: Blacks and Changing American Institutions*. He contends that grouping African American families and individuals, as a unified group outside mainstream culture is misleading, because cycles of deprivations have produced a large subpopulation within the African American society. He labeled this group the ghetto underclass, which is characterized with high rates of joblessness, teenage pregnancies, out of wedlock births, female-headed families, geographically contained, and families that have experienced long term poverty and/or welfare dependency. During private conversation with my students about their home life, I managed to identify some if not all of the previously mentioned characteristics. Accordingly, I was drawn to the conclusion that they belong to a “ghetto underclass.” Adopting such deficit perspectives structured teaching and learning in my classroom. I expected very little of my students – assuming that it was enough for them to face major life struggles on a daily basis. Basically I felt sorry for them.

Recently, I googled my name out of curiosity. I found a website called RateMyTeachers.com, which prides itself on changing the way the world looks at education by providing students with the unique opportunity to critique their teachers. On this website students can anonymously rate their teachers and professors. When I typed my name I found that the students used this website to rate me. Their responses varied between feelings that I am the best teacher by stating “THE BEST SCIENCE TEACHER IN THE SCHOOL,” or I am better as a mentor and a friend than a teacher. Examples that show the range include: “Hes madd kool hes a good teacher, even better as a mentor and a friend,” or I am so funny “Hes mad funny. Ah.” There is one response that struck me with its honesty, and its deep insight to how I felt towards my students. The student wrote “CCCCCOOOOOOOLLLLLLLLLL!!!! Passed his class with 90’s without trying!!” I felt so guilty when I read this response. I felt that I did not do my job as a teacher; my feelings of empathy became a structure that in reality truncated their agency because it did not provide them with necessary tools to achieve their legitimate goals in life. My inherent beliefs in the determinism of social class skewed my interpretations of these conversations. In simple terms, I was what Paulo Freire (1970) described in his book *Pedagogy of the Oppressed*: “a prisoner of a ‘circle of certainty’ within which reality is also imprisoned” (p. 39). My views in education and life were based on my sociohistorical background, and were detached from situational reality. Unfortunately, all the good intentions in the world would not have helped me, simply because I undertook my teaching with incorrect

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assumptions. For example, I thought that my students were in bad situations and it was my role to lead them to a better situation. This notion kept me focused on the negative attributes in their lives.

Racialization|deracialization

I felt that I was going to have to take the initiative in learning about pedagogy and the historical roots of the educational problems. I searched the different Ph.D. programs and focused on one program in particular at the CUNY Graduate Center, in New York City that offered a specialization in Urban Education. In my initial interview I asked the Executive Officer of the program what they were looking for in a Ph.D. candidate. He simply stated that since the program focused on urban education students should be interested in urban education, have a decent GPA, and preferably be a minority. I felt relieved since I fulfilled most of the criteria including the minority status. As I went further and explained my background, the Executive Officer of the PhD program refused to accept my minority status, saying that according to revisions to the standards for the classification of federal data on race and ethnicity (2003) there is a definite ambiguity if you are Middle Eastern, you would be classified as white, but not as a minority. John Tehranian (2007) describes this as “compulsory whiteness.” He argues that despite the use of race-based criteria in the hiring process, the racial status of Middle Eastern individuals remains indefinable. This ambiguity informs challenging employment practices, and undermines the advance in the struggle against racial intolerance. Being described as white perplexed me because I never thought of myself as a white. I saw myself as African American. My complexion is clearly brown and I have an Egyptian accent. It did not matter that my father was black. I was deprived of an ethnicity that I felt comfortable with and that was central to how I viewed myself in American society. Imposing a racial identity on me that I did not accept/acknowledge truncated my agency. Appiah (2006) argues that racial inscription shapes actions and life plans. Individuals are anticipated to act in ways that correspond to societal expectations, which are connected to the performance of their perceived roles. For me the problem with being racially inscribed as white is that this racial categorization is a structure that operates across different social fields, expanding my agency in some fields while truncating it in others. For example, I might not be hired, or get funded based on the fact that I am white. Lucky for me I got accepted to the Urban Education program and became a part time PhD candidate while continuing to work in my school.

Initially, I approached my study in the PhD program with the same positivistic view that I adopted during my teaching experience. This view emphasized structure over agency. I was product-oriented. It was very hard for me to take my eyes off the product in order to assess the process. My views were reductionist and naive. Even when I took a course on the structure of social knowledge of urban education I gravitated towards deterministic theorists such as that embraced by Samuel Bowles and Herbert Gintis (1976), who argued in *Schooling in capitalist America*:

educational reform and the contradictions of economic life that unless the structure of schooling changes, schools would remain tools for propagating injustice in American society. As time progressed and I took more courses that dealt with issues of social justice I became aware of the sociohistorical nature of science and science education and realized there could be no real “neutrality” in science because of the way it has evolved. I became aware of macro structures that I was not exposed to in Egypt, such as the roles that race, ethnicity, and immigration play in structuring individual’s goals in life.

My identity formation|reformation

My newly formed diasporic identity helped me attain my immediate goals of being a successful teacher. Hall (1990) elaborated on the development of diasporic identity as the temporary positioning of identity as “strategic” and “subjective,” and then used the three presences—African, European, and American – in the Caribbean to illustrate the idea of “traces” in his identity. Finally, he defined Caribbean identity in a foreign culture as diasporic identity. The evolution of this diasporic identity occurs at the conscious as well as unconscious levels, mediated by the agency|structure relationship in which agency could be defined as the ability to act. Roth (2006) argues that diasporic identity as a concept does not limit itself to the experiences deriving from intercontinental immigration and how these mediate science learning, but could be expanded to shed light on the experiences of native students in a culture foreign to the one they experience at home – such as African American students in a school culture that only values mainstream ideals. Therefore, in order to promote student science learning, it is important for educators to attend to whether classroom structures foster identity formation in science. Without developing such an identity students will not have the incentive to acquire and use scientific knowledge in class or in other settings.

Joining the Middle Eastern diaspora

One of the turning points in my life was the day of 9/11. On that day, I went to school as usual; by around the middle of the third-period a teacher charged into my room saying, “the Muslims have attacked us.” Some students started crying and asked if they could contact their parents. I had no idea of what to do. I felt lost, ashamed, and confused. I loved my students as if they were my own children. I felt the need to protect them and at the same time I could not do anything about it. I felt a sense of guilt overwhelm me for being Muslim in a country that has been attacked by Muslims. I wanted to scream that in Egypt I fought terrorists for three years during my military service. Later on, I complained to an African American colleague, telling her about my feelings of shame, because of what happened on 9/11. She responded by saying, “now you know Ashraf how I feel every time I hear that someone got mugged or killed by an African American. It is the same feeling of helplessness – as if I am responsible for the actions of a whole race.”

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The anti-Muslim sentiment became prevalent post-9/11. I still remember vividly the signs posted on the storefronts during the 9/11 period asking Muslims to go back to where they came from. One of the slogans read, “Love it or leave it!” suggesting that all Muslims hate the United States. These anti-Muslim feelings did not cease post- 9/11 – they became recurring themes that constructed the current political arena in the United States. Dana Chivvis (2010) states that “Tea Party” founding member and conservative commentator Mark Williams wrote:

The monument would consist of a Mosque for the worship of the terrorists’ monkey-god (repeat: ‘the terrorists’ monkey-god.’ if you feel that fits a description of Allah then that is your own deep-seated emotional baggage not mine, talk to the terrorists who use Allah as their excuse and the Muslims who apologize for and rationalize them) and a ‘cultural center’ to propagandize for the extermination of all things not approved by their cult.

I feared that at any point the United States authorities might perceive me as an undesirable individual based on my ethnic or religious background and decide to send me back to Egypt, as they did to the Iranians during the Iranian hostage crises, and to the Japanese during World War II. As I discussed my feelings with my family and Middle Eastern friends I found that most of us shared similar thoughts. The constant threat of being uprooted or even detained became a macro-structure that connected us and seemed to contribute to longer-lasting emotional solidarity (Collins 2004). This commonality directed me to resort to a more traditional approach of identifying myself, and appropriating the resources in my community. I moved to Astoria, Queens with the other Middle Eastern immigrants who experienced similar structural features in the American society at that time.

Today’s immigrants experience different challenges as a result of technological advances associated with globalization. Immigration used to mean that one had to totally desert his or her former country and try to assimilate into the host nation to which s/he had migrated. Due to advances in communication and transportation technologies immigration has come to be more about displacement than assimilation. Nowadays immigrants are more linked to their homelands via the Internet, phones and other methods of communication, connecting them to their roots and exposing them daily to the realities of the culture of the host nation and their native land. Globalization has structured the way they experience national identities and has supported the development of diasporic identity. As I enter Steinway Street in Astoria I experience the equivalence of Middle Eastern diaspora. It is a street owned and operated largely by Middle Easterners. Arabic is the predominant spoken language – some women cover their heads with scarves. Men smoke Shisha (the traditional water pipe) in their traditional Arabic robes and watch Arabic channels via satellite television. The corner grocery store sells a score of newspapers and magazines flown in daily from the Arab world. This street represents a social as well as a political reality of New York City. It is the

hybridization of cultural practices that are unique to its environment – it does not mimic their native culture or the host culture, but represents an amalgamation of both cultures.

The role of religion

In this hybrid culture Middle Eastern immigrants confront a dilemma of how to celebrate their individuality in the face of the tendency of mainstream culture to cluster them as monolithic group (Arabs, Muslims or terrorists, and sometimes interchangeably). This places agency and passivity in a dialectical relationship. As these individuals react to passively ascribed identity inscriptions they might claim religion as an element of identity; that is a marker of identity rather than a spiritual affiliation, to distinguish themselves from other immigrants. Within the Arabic diaspora I discovered that it is hard to discern identity markers. Accordingly, sometimes religion became a salient categorical factor with which I decided to associate myself. In a recent conversation with Kenneth Tobin, he asked me: “what are you?” And without thinking twice I answered “Muslim.” Reflecting back on my answer I realized that labeling myself as a Muslim was not based on religious practices or adherences to the basic tenets of Islam. It was more of an unconscious affiliation that might assure my distinctions in the face of constant struggle to assert my individuality. Jonathan H. Turner, in his book *Face to Face* (2002), presents a compelling argument that we are not solidarity seeking emotional animals that theorists like Durkheim, Goffman, and Mead would characterize (and theorize) us. Turner argues that humans are exposed to two challenging emotions, they crave strong emotional attachments and at the same time restrain against the limitations of closed social circles. He asserts that collective actions are not the norm. Individuals aim to maintain their individuality. Hence, in order to help them become part of the collective requires work or effort to initiate and sustain solidarity. In my case emotional solidarity was structured by the fear of isolation and rejection by a society. These emotions were so intense that they structured my decision to be part of the collective.

Accordingly, as a way to preserve my identity I chose at the conscious|unconscious levels religion as a constitutive factor in defining the self and the other. Religion provided me with a position to draw dissimilarity from other immigrants who share the same ethnic background and oftentimes the same local space but have a different religious affiliation such as Christianity, or Druze to name a few. My answer to Ken is also contextualized since I would have responded differently if I were asked this question in Egypt. In Egypt tribal association, geographical location, moral responsiveness, and ethical outreach become some of the salient identity markers that replace the need for asserting religious affiliation. My constant attempts to assert my individuality and resist integration into the collective are driven partly by my previous experiences in Egypt. I have seen firsthand how social integration among Muslim Fundamentalists led individuals to lose sight of their individuality and became willing to sacrifice their lives for the group’s interests, as in the case of

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suicide bombers – whereby the collective motive takes priority over the individual’s goals. Such individuals experience the equivalence of emotional solidarity, describing themselves in terms of the collective rather than aiming to assert their individuality. Emile Durkheim (1965) described their actions as a common case of “altruistic suicide.” Hence, my earlier attempt to adopt science as an identity marker and later on being drawn to have an affiliation with a religion were not contradictory in nature, but rather endeavors to draw dissimilarity from other Middle Eastern immigrants. Durkheim (1912) argues in his book *The Elementary Forms of the Religious Life* that it is enough for an idea to bear the stamp of science to be given a certain release from the rule of obligation, because in a modern world we have faith in science, and this faith does not necessarily differ essentially from “religious faith” (p. 438).

CONCLUSION

Globalization and education

The rise of the global economy has created structures that supported educational as well as socioeconomic inequities throughout the world. Education has the potential to play a significant role in ameliorating such economic and social disparities and provide the foundation for building a society that is inclusive. Schooling has the potential to impart the skills needed in the rapidly growing knowledge-intensive sector of the global economy. Students that thrive in schools will be better prepared to penetrate the well-compensated opportunity structure; and children who fail will be locked out of this structure. Youth in schools today, whether in New York, Egypt, Canada, or Puerto Rico will encounter a vastly different world from that of our generation. While they might continue living in local realities, these realities are constantly being challenged and integrated into the larger “Global Village.” The global transformations will require them to develop new skills that are far ahead of what mostly is being offered in today’s schools. New and broader visions are needed to prepare students to being an integral part of this changing world. Globalization’s increasing complexity necessitates a new paradigm for learning and teaching. It will require individuals to be cognitively flexible, culturally sophisticated, and work collaboratively in groups made up of diverse individuals. An education for globalization should therefore nurture the higher-order cognitive and interpersonal skills required for problem finding, problem solving, articulating arguments, respecting, and fostering multiple perspectives. This task is far from being easy, but it is attainable if we understand the underlying factors that shape our societal constructs.

Globalization and cosmopolitanism

One of the desired consequences of globalization may have been to increase the interconnectedness between people, making us citizens of the “Global Village.” In reality, humans had historically organized themselves as nations, cities, and

towns. These categories place these immigrants in a unique situation where they become citizens of the world, “cosmopolitans.” Being a cosmopolitan implies that the individual thinks that the world is his/her shared hometown, something that is disparaging upon tribalism. Theoretically speaking cosmopolitanism can be looked at as the creation of community that is theorized around sameness and differences. Theorizing cosmopolitanism around differences as well as similarities makes it more inclusive, with moral solidarity as the glue that binds the participating stakeholders.

Appiah (2006) in his book *Cosmopolitanism: Ethics in a World of Strangers* states, “If we are to encourage cosmopolitan engagement, moral conversation between people across societies, we must expect disagreements: after all, they occur within societies.” (p. 46) In a society that is constantly shifting demographically, differences should be expected, and it is our role as educators to figure out a way to include all the students and not only the selective few who choose to think in terms of the plural. To expect that all individuals should share a common goal defies the underlying principles of the United States constitution, with its implicit, as well as explicit respect for an individual’s rights. These constitutional rights could be reinforced at the legislative end and through educational practices that foster multiplicity. The struggle for cultural alignment with my students became a challenge of how to navigate through cultural fields without giving up my own core identity and associated self-worth.

Science and multiculturalism

In view of the macro, meso structures present, in order to succeed as a teacher I had to alter my standpoint and adopt multiculturalism as an approach to reach my students. I started by adopting Sandra Harding’s (1988) argument that multicultural science education is an essential ontological and epistemological standpoint that values the students’ cultural backgrounds. I asked my students to research the historical development of indigenous science. My goal in doing this was to help my students to see themselves reflected in the history of science, rather than accepting science solely as a universal Western construct. These task-illuminated misrepresentations in the current scientific literature tend to devalue students’ indigenous knowledge and value Eurocentric main culture.

Adopting multiculturalism in science education proved to be invaluable in terms of building social capital amongst my students. My epistemology evolved into a different entity that questioned: What is a scientist? What does it mean to do science and do it well? What talents are we overlooking in our students, especially in historically underrepresented minorities that may enable them to seriously contribute to the fields of science? Are there new ways of thinking about science that may showcase these talents? I felt that my role as a teacher is not only teaching my students science, but also exposing them to the current macro structures such as globalization and how they might structure their endeavors for better life.

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3. MATH, SCIENCE WHIZZES: SECOND-GENERATION ASIAN INDIAN STUDENTS IN THE CONTEXT OF ACHIEVEMENT, SCHOOLING, POSITIVE STEREOTYPING

Abstract The goal of this ethnographic study is to shed light on the process of schooling of Asian Indian students in urban schools and how it has mediated their lives particularly in the context of model minority rhetoric, urban schools, math Science education, achievement, identity and ethnicity. Asian Indian students are stereotyped as math/science whizzes, an English-speaking scientific community, and an achievement-oriented minority. In academia, teachers and professors perceive Asian Indian students as good, polite, humble, compliant students, and high achievers. There are many academic fields such as computer science, medicine, and engineering regarded as fields in which Asians achieve distinction. Three issues guide this study: first, what problems and conflicts emerge from the social relationships produced by the positive stereotyping of Asian Indian students. Second, how Asian Indian students use their agency to deal with problems and conflicts, and how their agency is expanded or impeded by complexities of the school context. Third, how does Asian Indian parents' cultural capital mediate Asian Indian students' academic achievement, specifically in the area of math, science, and technology?

Asian Indians and their children are positively stereotyped as “successful minorities” and are ascribed “model minority” status in American society because their educational and economic profile competes with the profile of whites (Feigelman and Saran 2002). The Census Bureau in 1980 classified immigrants from India, or individuals of Indian origin as “Asian Indians” or “Indian Americans.” Like many Asian Americans, Asian Indians are voluntary immigrants (Gibson and Ogbu 1991) who migrated to the United States in the quest of a better life. Indian immigrants fit into the successful minority mold. The model minority rhetoric defines Asian Americans as hard-working, smart, high-achieving people belonging to good cultures who value education (Lee 2002).

Stereotyping, either positive or negative, perpetuates prejudice, categorization, and false labeling (Schneider 2004). Although positive stereotyping has celebratory connotations, it is problematic for some students. It challenges them with high

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expectations, compliance, peer envy, and prejudice, thus creating stress for them. The second-generation Asian Indian youth living in working class neighborhoods, which attend inner-city schools, have intriguing experiences in school. Often these students do not meet model minority standards, and the students fall through the cracks, and experience downward mobility. Although there are contradictions, in general, post 1965 Indian immigrants have been successful in ensuring their children's success in school and stay on the path of upward mobility (Saran 1985). The data from this study indicate that children of newer, less educated and working-class Indian immigrants who migrated in 1980 and onward face complex challenges of urban schools.

The following few stories provide insights of school experiences:

Betty (White): Mr. Nevel I am not going to share a room with that Indian girl. I want another room.

Simran (Indian): I know why Betty does not like me. Mr. Nevel I did not ask you to select me. It is not my fault that I won the debate contest. I did not ask them to send me to represent New York. Everybody has an equal chance. Go and get the highest grade in class. If I am school president, I get scholarships, why does it bother others? Everybody has a chance to get 100s on tests. I work hard. I do not complain. I know why you are blaming me.

Mom: Simran you are a big girl. You are in high school. This is your fight. I am not like those parents who go to school and fight for their children for the wrong reasons. You have to prove yourself Simran.

Kamini, a seventh grade Asian Indian student in an urban district with a dense South Asian Indian population discussed how in her elementary school, Indian children were mocked by non-Indian students as "smelly." According to her, it was unfair that many students did not want to sit next to them in the classroom. She confided that she and her friends did not share their frustrations with their teachers because they felt that complaining would not produce constructive results. Their teachers knew about name-calling but did not try to do anything about this.

Raghubeer, a student in an inner-city middle school has been a target of racial prejudice and has been beaten by a group of his classmates because of his turban, beard, and good grades. He said that many students in his class resent the fact that "A guy with turban, who looks like a terrorist, gets highest grades in his class." One of the school administrators confided to me, "You are not Sikh ... good I can talk to you ... these Sikh children are very rowdy and rough. Sikhs are very loud they have no manners." Stories of Kamini, Simran, Raghubeer, school administrator, and many other stories that have been shared with me have motivated me to explore the educational and social experiences of Asian Indian students in New York City Public Schools.

ACADEMIC PROFILE: ASIAN INDIAN STUDENTS IN NEW YORK
CITY SCHOOLS

In New York City, 3,260 Indian children are enrolled in elementary, middle, and high schools (Coalition for Asian American Children and Families 2004). In Queens, education districts 24, 26, and 27, have the highest concentration of Indian students. In New York City the four largest Asian groups are Chinese (39% of all Asians), Indians (27%), Koreans (10%), and Filipinos (8%). According to the 2005 Community Survey Public Use Microdata Sample (PUMS), 232,417 Indians are living in New York City. In the United States the Asian population is 1,678,000, in other words, less than 1% of the total population (United States Census 2000).

In her research of the Asian population Louie (2004) states, “Asian Indians and Japanese students perform the best, followed by Chinese, Koreans, Filipinos, and Southeast Asians” (p. xxvii). The College Board (2009) confirmed Louie’s assertion and reported that on the Scholastic Aptitude Test (SAT) Asian students scored 72 points better than the general population. The scores of standardized tests and SAT of Asian Indian students demonstrate comparatively high academic achievements. The Coalition for Asian American Children and Families (CACF), report that during 2004, in New York City, “Asian Indian high school students graduated at a rate of 67%, second only to white students at 71% and significantly higher than black (44%) and Hispanic (41percent)” students (p. 14). The number of failing Asian Indian students also was very low compared to other ethnic groups.

METHODOLOGY

This cross-generational critical ethnography is contextualized within the critical constructivist paradigm and is guided by a phenomenological hermeneutic framework. I have employed critical ethnography to observe the hegemonic nature of positive stereotyping, phenomenology/hermeneutics to study Indian students’ experiences and interpret their lived experiences at the micro, macro, and meso levels. Since this study examines complexities of positive stereotyping, both high-achievers and low-achieving Asian Indian students are included.

I collected six kinds of data: (1) ethnographies of one multiethnic, middle-class magnet school in New York City (2) 50 in-depth interviews with 1.5 and second generation Indian youth and teenagers in community centers (3) informal interviews with 95 second and 1.5 generation Indian students of Indian Club in both specialized schools, and community centers (4) classroom teachers and school administrators/personnel (5) Indian parents (6) non-Indian classmates of Indian students. I spent four months at a magnet school attending everyday activities. This allowed me to observe day-to-day classroom discourses, Indian students’ interaction with their teachers, their Indian and non-Indian peers, and their work habits in the classroom. I followed them in the lunchroom, playground, outside school trips, and all other

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extracurricular activities at school. I drew on participant observation, informal interviews, audiotaping, videotaping, and micro-analytic approaches to study Asian Indian students' experiences in school.

This study was conducted during the school year 2005–2006 in a few schools in New York City. I selected the schools on the basis of the concentration of the Indian population and academic performance of Indian students in those schools. Participants in this study are from three elite, high performing specialized high schools, four magnet and low-performing middle schools, and three elementary schools.

The participants in this study are second-generation (native born) and 1.5 (foreign born) Asian Indian students who range from 5th – 12th grades. This study differentiates between second-generation and 1.5 generation, because the children who migrate with their parents have different educational experiences than minority, second-generation native-born children of immigrant parents (Gibson 1988). Immigrant children who migrate after the fourth grade have more social and academic problems in school than those raised from early childhood in American society.

STEREOTYPING: ASIAN INDIAN STUDENTS IN SCHOOL CONTEXT

Academic communities and teachers stereotype Asian Indians and portray a collective image of them. For example, if in a class of 25 students, 6 Indian students excel and impress their teacher with their docile behavior, good work habits, and high grades, the teacher stereotypes all Indian students as high-achievers and well-behaved. In a given school, many Asian students take the top-level or advanced placement courses, and it becomes a norm of the school that Asian Indians often have a high performance rate. Consequently, because of the collective belief, the school stereotypes Asian students as high-achievers and often overlooks those Indian students who are low-achievers, need instructional help, suffer from cultural isolation, have learning disabilities, or struggle in school because of language barriers.

American media and scholars have promoted a stereotyped positive image of second-generation Asian Indian students in American society. However, in reality the model minority discourse perpetuates dominant values and cultural norms and overlooks increasing variability within a diverse group. Carola Suarez-Orozco and Marcelo Suarez-Orozco (2001) point out the variability within Asian students and argue that all Asian students are not model minority students. They explain:

It would be a mistake, however, to conclude that all Asian students are thriving in well-functioning integrated schools. The recent Asian immigrant experience suggests two distinct pathways. As more Asian immigrants find themselves in poor and segregated schools, they face the same limited opportunities of other immigrants of color. As a result, for these students academic achievement and pursuit of the American dream is more elusive ... while some are following the expectations attached to the “model minority” stereotype, others are struggling with schoolwork and are performing at the same level as other ethnic and racial minorities. (pp. 134–135)

Pedro Noguera (2003) addresses the variability in minority students' schooling, academic performance, and achievement. He points out the tendency to generalize the high or low performance of a few individuals to represent the whole group. Accordingly, researchers, policymakers, and the media do not take into account the diversity in immigrant populations and stereotyped minority groups on the basis of academic success or failure of a few members of minority groups, resulting in a negation of the diversity and variability in academic performance.

SCHOOL CONTEXT, SELF-DEFINITION, AGENCY AND THE DEVELOPMENT OF ASIAN INDIAN STUDENTS' IDENTITIES AS MODEL STUDENTS

Defining self in the context of model minority

Although there is diversity among the Asian Indian population, my respondents, first-generation Asian Indians (parents), second-generation Indians (students) and their teachers, all confirmed the collective ascribed model minority image. The second-generation Asian Indian students, their parents and teachers believed that the model minority image was an accurate collective image of Asian Indians and they formed their identity in the context of model minority discourse. One of the participant students expressed his individual and social identity:

I am a good student. All Indian students are good students. We do not get in troubles. In this school all Indians are doing well I do not know about other schools ... my cousins my friends' brothers, sisters all are in good colleges ... all Indian people try to work hard, live well and make sacrifices for their children. (Faiz 8th grade)

Science teacher's perception

Asian Indian students are good kids ... they are smart. Most of them work hard. They are well behaved and respect their teachers. Their parents make sure they do their homework on time and they do well in class. Our Special Placement classes are full of Indian students.

Indian parent's perspective

Our children are doing very well in school. They get awards, scholarships. I tell my children to work hard and have good education because only education will bring success to them.

The participants in this study believed that the image described them accurately. Faiz referred to all Asian Indian students as "we," and many of my other respondents used collective terms like "we" and "us" for all Asian Indians. I interpret "we" as their social identity. This term implied a collective identity, common characteristics,

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a sense of generalization, and togetherness. The majority of Asian Indian families believe that overall their children's performance is exemplary, and they are proud of their achievements. In general, teachers positively stereotype Asian Indian students because they are well behaved, follow classroom rules, show respect to authorities, work hard, and their parents cooperate with teachers.

Many of the participants in this study have a sense of membership in the high status group that is academically successful in school. In general, for most of the high-achieving participants it was easy to identify with the "high status" groups that have white, middle class norms. This self-identification and self-perception worked as a motivator for them. They perceived themselves as good learners/students and wanted to be part of the group that is associated with prestige and honor.

I am a good student. I do not want to do anything that will interfere with my study. All Indian students are doing well in this school and many are in honor roll. I am always in honor roll and I always want to be in honor roll. My parents never pressure me to get good grades but when I get 95 my mom says what happened to the other 5. I do not mind this. You know this is good for me. She keeps me on track. If she is happy with 85, I guess I will not work hard to get more than 80 or 85 that is not good grade for me. (Anil 8th grade)

In my elementary and middle school my teachers adored me because I was their top student. I went to a magnet middle school, and I was lucky to be accepted to a top ranking specialized high school ... you know specialized high schools are ranked according to their performance. I was the valedictorian in my elementary and middle school. And I hope to be valedictorian in high school. In my high school everybody is smart ... here I am not special ... I am an average student ... that is scary. I feel my grades speak for me. Nobody can take my grades away from me. (Trishita 12th grade)

I knew at a very early age that if I get good grades I had easy time in school. All Indian girls in my elementary and middle school tried to do well on standardized tests because we knew that those grades were very important for us and no mean teacher could change those grades. There were mean teachers who did not like us and do things like that. I am in this school because of my grades ... and I have good score on SAT test ... I like to write poetries. I won New York City poetry contest when I was in 5th grade. (Rehana, 12th grade)

Identity cultivation

In this study I focus on identity cultivation; both social identity and individual identity, in the context of math and science learning and achievement. High-achieving participants in this study have developed a social identity that was connected with group membership. Although for them learning and academic achievement was an individual act and they considered learning as their individual responsibility their

individual identity is connected with their social identity of the model minority community. Jean Lave and Etienne Wenger (1991) explain that individuals try to learn something if they identify themselves with a community that possesses that knowledge or skill. My high-achieving students used their agency (ability to produce) to acquire higher grades and formed a community of high achievers. Learning was important for them because they belonged to a group that placed high value on learning and achievement. They tried to work hard to continue their association with the “model minority” community, and formed their social identity of “good students.” Wenger (1998) describes the relationship between individual and social identity: “The concept of identity serves as a pivot between the social and individual, so that each can be talked in terms of other” (p. 145). However, low-achieving Asian Indian students tried not to affiliate with “model minority” community and they had no motivation to be a good student and form their individual identity as a high achiever. Wenger (1998) explains this concept saying: “Non-participation can take many forms-being an outsider ... or being marginalized-each with different implications for the resulting identities” (p.148). It was evident that many Asian Indian students who did not fit the model minority image considered themselves as outsiders and felt marginalized.

Asian Indian students’ school performance and their achievement cannot be separated from their cultural context. Pierre Bourdieu’s (1979) concepts of scheme, habitus, agency, and structure provide an understanding of the connection between micro and macro social realities. Individuals’ interactions and their agency (ability to produce) are guided by structures (social limitations) of the fields in which they live. William Sewell Jr. (1992) sees learning as cultural production that involves structure, practices, schemas, and resources. Inspired by Bourdieu’s idea of habitus and schemes, Sewell came up with an agency and structure theory that conceives of culture as a system of symbols and meanings as well as a system of practices. In the context of schooling, learning, and culture as a system of practices refers to a power relationship between teachers and students, teaching practices, positive or negative discipline reinforcements, and students’ behavior in the classroom.

Many of my model minority respondents expressed that they like school tests, standardized tests, and other ongoing evaluations in different fields of schools. They view tests as resources to reproduce their identities of good student, and as resources to gain entry into magnet middle schools, specialized high schools, and competitive colleges. All these participants apply their agency to meet the model minority standards in different fields of school.

Rehana, one of the participants reported that in her specialized high school Asian Indian students are labeled as math and science “nerds.” Rehana said she always got good grades in math and science but she knew that writing is her “passion.” In the context of re/production of identity Roth explains “identity and emotions are not stable or personal features of human existence but are continuously re/produced individually and collectively.” Defining her identity as a high-achiever Rehana described herself as a person who is “compelled to excel.” She said, “I pressure

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myself. My parents do not pressure me to study.” She defined her “inner self “as an over-achiever. Speaking of Indian students she always used the collective identity “we.” The individual and collective identity of motivated Asian Indian students is reproduced through their desire to work hard and get ahead.

My high achieving respondents are continuously re/producing their identities individually as high achievers and collectively as members of model minority. By enacting their agency at the macro level through participation in many fields of school, these second-generation Indian youth confirm their stereotyped reputation in their school, and are meeting academic standards set by meritocratic norms of dominant culture. They define their racial and ethnic identity according to model minority standards.

DIALECTICAL RELATIONSHIP OF ACHIEVEMENT AND CULTURAL CAPITAL

I got into Columbia University. You know it was sort of natural for me to end up in a college like Columbia College. My younger sister is smarter than me she is planning to get into Harvard University. My parents expected me to do better than them. Mom has a M.B.A. from India and my dad competed in one of the toughest civil service competitions and was a commissioner in his state. I dared not to end up in a community college. (Trishita)

I have not decided yet, but maybe I will be a doctor. My mom wants her daughters to be doctors. My older sister is in Med School. My father is a computer science professor at Baruch College. I am good in math and science so mom thinks I should be a doctor. I think being a doctor is easier than being a lawyer. My mom is an accountant. She wants her daughters to be better than her. (Vandana)

High achieving participants of this study are motivated by their parents’ aspirations and high expectations. Data from this study reveal that high achievers were inspired by their parents’ educational and professional attainments. Consciously or unconsciously they tried to follow their parents’ footsteps. Bourdieu (1979) explains that educational capital of the Asian Indian students corresponds to cultural capital. Like many other model minorities, Asian children come to school with rich cultural and educational capital. Cultural capital is comprised of an individual’s education, class location, values, beliefs, language patterns, moral character, image of success, sophistication of social relationships, and lifestyle. Individuals’ cultural capital mediates and validates their position in different social structures and fields. Their social mobility, social interactions, and accumulation of social capital are guided by cultural capital.

The cultural capital of my respondents provided them with a clear image of success and self-assurance and enabled them to earn positive reputations in different fields of school. For example, with her high grade point average, Trishita had earned teachers’ admiration and occupied the position of peer tutor, best debater,

and valedictorian. According to Bourdieu (1979) the notion of an individual's self-assurance, their values are "very closely linked" to their cultural capital and their status in "social space and trajectory." Like many Asian immigrants' children, Asian Indian students' learning and academic achievement are also a collective activity of family, children, and school. Asian American parents influence their children's academic achievement, place considerable value on education, and very closely monitor their children's education (Park 2003). All of my high-achieving respondents had high levels of self-assurance, and confidence, and were constantly using their agency to build successful images. Many participants of this study have internalized their parents' expectations and achievement ideology. They are compelled to do well in school in order to establish a good career that will bring them financial safety and respect. Asian Indian students are compelled to "interpret and assert identity" in the light of expectations held by schools and their families. Regardless of their socioeconomic status, or educational background, parents motivated their children in comparable ways and hoped for upward mobility. Like many other Asian parents, Indian parents have high expectations for their children (Portes and Rumbaut 2001) and often, high expectations and inspirations create tension and pressure for their children.

The participants of this study try to hide their tension, and struggle to live up to their positive stereotyped reputation. The model minority stereotype challenges students with high academic expectations, and often familial and school's high expectations create stress for some students (Asher 1999).

"STAYING AWAY" STRATEGY: MAINTAINING SOCIAL DISTANCE

I try to stay away from fights. You know there are many students who are bad ... they curse, get in fights all the time, I try to stay away from them ... if they call names I keep silent. I do not answer them ... my parents do not want me to get in trouble. I stick with my friends. (Anil 8th grade)

In my elementary school many kids called Indian students "smelly." They made fun of our names. Same thing happened in middle school but we ignore them. It's our grade that matters. These students are jealous of us. They think we are quiet so they bother us more than others. My brother was beaten-up by his second grade classmates many times. He did not tell my mom about these incidents because he thought mom would be angry with him for messing up with bad boys. He did not fight back so they ganged up on him. Finally the principal came to know about this through a parent and those boys were punished. I am in a specialized high school. There are many Indian students who experience these things, but we try to keep to ourselves. (Rehana 12th grade)

All these examples speak of strategies adapted by high achievers to stay away from confrontations and unpleasant situations with other students in school. My correspondents tried to be silent about experiences of prejudice and harassment.

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They all mentioned that they had experienced name-calling and confrontational situations, but they dealt with them silently. No one mentioned that they complained to their teachers or school authorities.

Caught between the identity of “us” and “them,” Asian Indian students prefer to stay within the safety zone “us” and stay away from “them,” those who might cause problems. Staying away from fights, confrontation, and defiant and disruptive students is one of the major aspects of their schooling. Academically oriented Asian Indian students demonstrated a passive attitude towards abuse and confrontation. Asian Indian high achievers maintained a social distance from students who demonstrated oppositional behavior, and who did not conform to school norms. The “staying away” strategy supports John Ogbu’s (1991) framework of immigrant and voluntary minorities’ adaptation strategies. According to Ogbu, voluntary minorities tend to overlook prejudice as a temporary obstacle to be overcome, and place a higher value on academic achievement. Asian Indian parents instruct their children to ignore prejudice and abusive conditions, focus on academic performance, and acquiesce to authority. All my respondents informed me that their parents advise them to stay away from troubles and keep a social distance from “them.” The development of the collective identities of “we-ness” and “they-ness” defines categories of a social world where “them” or “they” are elements that can be road blocks to Asian Indian students’ achievement.

STRATEGY OF SILENCE AND ACCOMMODATION: SURVIVAL TECHNIQUES

I am very quiet and I do not like to talk in class. This semester I scored 100% in social studies test and 100% in project work, but my average came down to 93 because Mr. Campbell, the social studies teacher gave me 80 in class participation. I do not like this but I did not say anything. He knows I do good work but I do not like to talk much. I was like that in elementary school. My parents said he is my teacher and I should respect him. You know I do not like to talk and I will not talk in class. (Vineet, 8th grade)

Because of her cultural upbringing and introverted personality, Vineet does not have a positive relationship with her teacher. For Vineet, a model minority student, her grades are most important. She thinks if she does good work she does not need to participate in classroom discussions. Vineet’s parents believe that she is heavily penalized for her introverted personality and her shyness. However, they feel powerless and prefer to be silent about this possibility. They are afraid to take matters to the principal because their action might aggravate the teacher and Vineet will have to pay a heavier price in her final semester. Vineet is very angry, but “not with her teacher, she is angry with herself for not participating in class.” She blames herself for losing 20 points. I interpret that by blaming herself for losing points Vineet expressed her powerlessness, and her parents’ decision to be silent is a survival strategy.

Rehana recalls her experiences in elementary school: We were always silent about many things that happened in school. In my fifth grade a White teacher called an

African boy “Vermin.” The same teacher did not like Indian children she treated us like we were vermin. She did not like when I got the highest score in my class, or when I won the New York Times Poetry Competition and got 12 thousand dollars award. She always shunned South Asian children in class and always ignored us. However, we never complained about this teacher. When my brother topped his class in fifth grade, his African American and Spanish classmates wrote the four-letter word in his yearbook. They wrote, “You nerd we hate you,” “Stupid nerd I hope you die.” We did not let our parents know about this because we knew they could not do anything to stop these things ... and they will be worried, we did not report to school because we did not want to create more problems for us.

Rehana’s story is typical of many Asian Indian model minority students who demonstrate non-confrontational behavior and keep silent. In the Asian context, Stacey Lee (1991) describes the non-confrontational behavior as a “strategy of silence,” and a consequence of feelings of powerless. Rehana, her brother, and other Asian Indian friends felt an inability to stop prejudice and antagonism, and preferred to be silent. They have internalized their parents’ marginalized position in the dominant culture and truncated their agency to confront prejudice. Rehana expressed that her elementary and middle school years were tough for her, and those experiences always stay with her. She told me, “I always felt that I was a second class citizen but I knew that it was better to keep quiet.” According to Keith Osajima (1988) Asians use silence as a survival strategy. Ogbu (1991) in his framework of minority performance explains that voluntary minorities perceive discrimination and prejudice as an inevitable temporary aspect of the migration process and they try to deal with it silently.

Sakim explained that in his Special Placement (SP) science class he is assigned a back seat and he has difficulty understanding his teacher because she speaks very softly. He said, “I always raise my hand to ask her if I do not understand something, but my teacher never pays attention to me.” Sakim is a quiet, very gentle, and well-behaved student.

He narrated his story very sadly: I cannot get into any good high school now. My average was 90–96. But now it is 84. I failed a science test because I was sick and missed the test and the science teacher refused to give me the test on another day. She said it was my fault I should have copied notes from my friends. My parents did not talk to my teacher about the test, they told me to work hard and get focused. I am really worried ... you know all good high schools take students with 90 and above average. I am trying hard. You know in my elementary school I was the only Asian Indian and I had highest math score in 4th grade standardized test. I received a certificate for that but now ...

Sakim and his parents are silent about this problem. Rather than complaining to the teacher or the principal about his difficulties, his parents asked him to work hard and focus. Sakim said that he has asked Anil to help him in science and he is hoping to improve his average. However, he is convinced that he will end up in

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a zone high school with his low average. He did not talk to his teacher about the seating arrangement on the assumption that she will not listen to him. Although Sakim is an SP student with a good academic history he feels powerless to improve his learning experience. He blames himself for his failure. He said “I should have borrowed notes from my friends. It is my mistake. I did not know that she covered test material in her notes.” Sakim revealed that he did not like his elementary school because his non-Indian friends were jealous of him. He confided to me “they were angry with me because I always got the highest score in class. They did not play with me. I was lonely. I hated my elementary school.” His parents moved to a better neighborhood with a better school, but Sakim also had a hard time in that school. Although he is having difficulty in his science class he is much happier in middle school because he has many friends there. All his friends are South Asians and West Indians.

Asian students are not vocal about their problems, and their complex experiences remain hidden behind success stories. They use silence strategies to deal with negative experiences. The parents teach Asian Indian children that failure is their fault and students are responsible for their own learning (Gibson and Ogbu 1991).

CONTRADICTIONS AND OPPOSITIONAL BEHAVIOR

I always got above a 90 in all subjects. In math and science I scored 99–100. I never bothered anybody and I tried to be nice to all of them. But these [students] would always beat me up. No teacher took my side. They always told me it was my fault. I was punished all the time. My parents do not come to school and talk to the teachers. All these black and white parents run to school and fight with teachers and the principal. All teachers are scared of parents who fight with them. I have to defend myself. Now I am bad. I behave like them and now they are scared of me. I do not care for my grades now. It is better to be bad than beaten up and cursed at every day. (Raj, 8th grade)

This story reveals that there are many Asian Indian students who surrender to external forces and fail to live up to the positive stereotyped reputation. Often contradictions appear and Asian Indian students demonstrate oppositional behavior as a result of peer pressure, or because of the ignorance of teachers and school officials, cultural differences, peer envy, or in a few cases due to linguistic barriers, and in many cases, to protest unfair treatment by the mainstream culture (MacLeod 1995). Raj made a resolution not to be beaten up every day, and not to worry about his grades. He refused to be a timid, helpless individual. He acted in self-defense, and traded his identity of high achiever for low-achiever. The end result was that his parents blamed the school for not helping their son and moved him to a private Catholic school hoping that the stricter discipline and a better student body (upper middle class students) would correct their son's problems.

“COOL INDIAN” SYNDROME: AMERICANIZATION AND
SUBTRACTIVE ASSIMILATION

I am a “Cool Indian” ... You know I am an Indian but I am a cool Indian. I want to be an American and an Indian. So ... I can act cool. You know I am in SP class ... I am smart. I can be smart and cool. (Maganjot, 8th grade)

Maganjot thinks he is cool because he does not act “nerdy” like other Indian students, he dresses “baggy,” and he has more American friends in school. He translates being cool as being an “Americanized” Indian. For him being “cool” means he can read a magazine while the teacher is teaching an important math lesson, and he can refrain from competing with the other students of his SP class, by being relaxed about class work, by not preparing for tests, by talking loud in classroom, and by being careless about his rapidly falling grades. Among his classmates his nickname is “Mango.” He dresses in baggy clothes that are not favored by Asian Indian students. I noticed that in general Asian Indian girls and boys followed the informal dress codes of their school. High-achieving Asian Indian girls and boys dressed conservatively.

His teachers complained that his grades are declining and that if this trend continues he will be thrown out of SP class. Unlike model minority high achievers, Maganjot has no desire to get into highly competitive specialized schools. He is happy to be “cool,” and “American.” His identity, “I am a cool Indian” implies that his Asian Indian classmates are “un-cool” or nerdy. I stress that indirectly he rejects the model minority image, and by acting cool he distances himself from the dominant academic norms of school. Although Maganjot calls himself Indian he uses the adjective “cool” to effect a “De-Indianization” of his “Indian-ness,” and to deconstruct the idealized image of Indian students in his school.

For Maganjot, “being American” means embracing oppositional behavior, and to identify with students who negate the model minority image. Angela Valenzuela (1999) explains the relationship between “Americanization” and the countercultural action of the immigrant youths. According to Valenzuela many immigrant youth show “stark” differences from their parents in demeanor, dress, language, and other cultural dispositions because of their rapid cultural assimilation and their psychological need to be accepted by their “Americanized” peer group.

CONCLUSION

Throughout this study I analyzed how Asian Indian students’ academic achievement and their learning involves a conversion of their cultural and social capital and how they use their agency to expand or impede their academic achievement and life success. I explored factors that play a vital role in Asian Indian success in a foreign land where they achieved status of “honorary white.” In this study, by listening to the stories of the second-generation and 1.5 Asian Indian youth I stressed that

model minority rhetoric is a myth and it might not hold in the future, as the parental inspiration and involvement would be weakened by the Americanization process and conflicting identities. I found that contradictions to the model minority image speak of a future when Americanized and rebellious Asian Indian youth would not live up to their collective positively stereotyped image and would embrace a path that might lead them to downward mobility.

High-achieving Asian Indian students have acquired a dual identity which enables them to constantly maintain a pragmatic balance and to fit-into the socio-cultural context of school. My in-depth interviews with them revealed that they constructed their identities as high achievers, and their racial and ethnic identities were intertwined with their academic identities. All of my correspondents indicated that their parents and teachers expected them to excel in their school, get admitted to good colleges, and be professionals.

High-achieving participants in this chapter mentioned that they tried to overcome discrimination or prejudice through good grades and hard work. They perceived their academic achievement as a tool to fight against discrimination and prejudice. Asian Indian students have adapted the meritocratic values needed to survive in American society. The respondents of my study who are living up to model minority standards did not limit their ethnic or racial identity to “Indianness” but instead stressed meritocracy and their micro-identity of smart students and high achievers. Many Asian Indian students expressed that being Indian means they are supposed to work hard in school, respect their teachers, and stay away from problems. Anil said, “I am an Indian, but for my family and me it is very important to be a good student because if I do well in middle school I will get into a specialized high school and a competitive college and will have a good job. It is very important to have a good job.” Students like Anil construct their identities internalizing parental and external expectations and pressures. Their positive attitude towards schooling is driven by a “strong parental drive for achievements” and an “extraordinary” parental pressure to achieve molds children’s attitudes towards school.

Participants in this study are aware of their “otherness” in the mainstream society and they expressed their otherness in their own ways. I conclude this study with their words.

Anil, the representative of the model minority, said: I do not like to behave like those students who give a hard time to their teachers in class. All teachers are not the same. My math teacher is more structured than the science teacher, but it does not mean that I act mean in science class. I like to be on the honor list and I focus on my studies. I like to do my work and get good grades. My teachers like me because I work hard and I do not give them a hard time. All my friends [Indians] study and do not waste our time. My parents tell me that Indians have to work harder than others ... I agree with my parents.

Rupa, a newcomer in middle school scores highest grades in her class. She expressed her desire to be a model minority student and said: I am new in this school. I want to get good grades but my English is not very good. I want to be a doctor. My ESL teacher is very good to me. If I would have had more teachers like the ESL teacher it would be a lot easier for me. However, I am sure I will learn English and do a lot better in the future.

My research highlights the complex school experiences of second-generation Asian Indian youths like Anil, Raj and Rupa. Anil's agency is expanded by the structure of his home and school, Raj's agency is truncated by the negative conditions of the school context, and Rupa is motivated to employ her agency to achieve higher academic success and meet model minority status. Asian Indian youths like Anil, Raj, and Rupa are the future of the Asian Indian community in the mainstream society. As the second-generation youth of my research come of age, they negotiate different ways of "being American" and in doing so they will reshape the Asian Indian community. How Asian Indians will be viewed in the future and whether they will be able to hold onto their ascribed model minority image depends how the second-generation use their agency to meet the academic, social, and political challenges of the mainstream society. The second-generation decline theory proposes that children of minority immigrants tend to experience relative downward mobility because the second-generation youths distance themselves from their ethnic culture, and in the process of "becoming American" they deviate from the path of success. Only time will tell whether the model minority image will sustain or the predicted second-generation decline theory will prevail.

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4. SINGING A DIFFERENT TUNE: AN AUTO/ ETHNOGRAPHIC JOURNEY INTO AND OUT OF THE LAND OF EDUCATIONAL TECHNOLOGY

Abstract In this chapter, I use auto/ethnography, sociocultural theories, identity theory and critical pedagogy to make sense of disparities in the ways in which technology is (or isn't) integrated into urban school curricula. First, I draw on my own experiences as a digital native at home, as a student in a technological high school and as a college instructor to illuminate the differences between how technology is taught in schools and how it is integrated into daily life outside of schools. Next, I re-examine the findings of a study I conducted about teachers' identities and technology integration practices in an English/Technology curriculum-writing group at a college in New York City. Finally, I introduce my work with the Young Researchers' Club, a group of students who conducted critical social research in an under-resourced and technology sparse "failing" school in Boston. By bringing these data sources into conversation with each other, I illuminate 1) the contradictions between what it means to be technologically fluent outside of school and to learn to use technology in school, 2) the ways in which technology has been prioritized as a mechanism for control over learning in some urban urban schools, 3) how the literature on technology integration is woefully ill-equipped to tackle what technology integration means in a high-poverty urban school and the implications this has for educational equity, and 4) how high quality learning environments may be afforded for urban students despite the absence of technology resources.

For the past thirty years, integrating technology into education has remained a top priority in education reform discussions. Since computers made their entrée into classrooms in the 1980s, educators in the U.S. have seen the national computer to student ratio shrink from 92:1 in 1983–84 to 3:8 in 2006 (Bausell and Klemick 2007). We have seen countless professional development strategies, digital divide initiatives, policy recommendations, and partnerships with corporations. The perceived need for technology integration has become so pervasive, so commonsensical, that it is difficult to have conversations about education that don't refer to 21st century skills, global learning, global citizenship, and the digital/information age. Year by year, we appear to be closing in on the realization of the techno-dream in education if only we could incite one final transformation—an overhaul in classroom pedagogy. Until this happens, the story goes, the promise of technology remains only a promise. For

the past five years, I have contributed to the chorus of voices promoting technology integration in schools. Specifically, my focus was on providing equitable education in underperforming urban schools by encouraging professional development learning communities for teachers (Kress 2008), as well as challenging oppressive urban school structures that make technology integration in these schools particularly difficult (Kress 2011a). Yet, each year as I am introduced to more urban teachers and students, I continue to see the same scenarios that I have seen for the past ten years. Technology isn't being used much, and when asked why, people point fingers at each other.

The technology promise is beginning to look empty, causing me inner turmoil as my techno-identity is called into question. As a result, I have been doing a lot of *Self* searching, because I need to know exactly how I got to this place in order to understand where to go from here. If not technology, then what? According to Kincheloe (2005), "A critical ontological vision helps us gain new understandings and insights as to who we can become. Such a vision helps us move beyond our present state of being—our ontological selves—as we discern the forces that have made us that way" (p. 162). In this spirit, in the following sections I chronicle my journey into and out of the land of educational technology, by reflecting on a) my own contradictory childhood experiences with technology in education; b) how my own teaching practices and research about technology integration in New York City reflected and contradicted those experiences; c) the blind spots within educational technology literature which strongly influenced my research; and d) how a change in context has led me to rethink technology integration altogether. I assert that, indeed, a pedagogical overhaul needs to occur, but not the kind that the techno-world has been singing about for the past twenty-five years.

A DIGITAL NATIVE IN A GUIDED-INSTRUCTION WORLD

I was a middle-class kid who grew up in Staten Island, NY and attended New York City public schools for all of my K-12 years. My formal education was very traditional, individualistic, rote learning—repetition, worksheets, *lots* of following directions. I don't recall group work activities or student-centered assignments unless they involved projects that were completed at home. None of my classrooms had computers in them. In the 1980s, when computers were slowly making their way into schools, I looked forward to the rare occasions when my elementary school teacher would walk my class down the tiled hallway and up the metal staircase of our old building to the library where the computers were kept. Computers were separate from academic learning. Computer time was fun-time. We used the computers to play games, not educational games, just racing games and games where the user shoots aliens on the screen; meanwhile, our teacher graded papers or talked with the librarian.

By the time I was in middle school, computers had become more available in schools, but computer use still occurred in a computer lab and was still separate from academic learning. We sat at the dusty machines with papers that had lists

of commands on them, and we typed the commands into the machines to program them to do something in particular, like print a name repeatedly on the screen or make a little green ball of pixels bounce around. The programming was tedious; an awful lot of work for such little payoff, and always all students were doing the exact same-guided task with the exact same end result. Partly, the separation between computer use and academic learning could be attributed to the newness of the technology; however, even in the early 1990s when I attended a technical high school and used computers several times a week, the tasks I performed were never related to my academic classes. They were computer specific activities involving programming in BASIC or PASCAL, programming robots to drop pegs into holes, or learning to use a particular software, like Computer Aided Design (CAD) for mechanical drawing. Aside from CAD class where students were expected to use the program to create their own mechanical drawings, computer use in high school was tremendously boring. There was no exploration of the capabilities of the machines or even satisfying explanations about why we did what we did; we simply followed the appropriate steps in order to get the “right” outcomes. I still remember the binary numbers I memorized for an exam but have never used in my life (0000, 0001, 0010....). After these experiences, I never wanted to “go into” computers because I couldn’t see how they connected to my life.

The irony of this reflection is that in 1984, when I was in the third grade and computers were first entering schools, I had more exposure to computers and technology than all of my teachers and classmates, and probably most people in the country, because of the home I grew up in. None of my friends had computers in their homes because they were too expensive and didn’t yet serve a practical purpose; in my house, there were at least three computers because my father is a computer scientist. Computer use in my home stood in sharp contrast to computer use in my schools. At home, I wasn’t allowed to use computers for playing racing or alien games because my father insisted that computers were for work, not for play. I remember my father plugging the actual telephone receiver (not the phone cord) into a black rubber modem in order to “talk” to people in California. (He was using email before most people knew it existed.) I remember using a handheld device with a half dozen colorful buttons and a plexiglass scope with cross hairs on it to draw pictures with a cartoon pencil on the computer monitor. (Before ordinary home computers were even equipped with them, I was using a mouse to create artwork.) I saved data files onto what most people would have thought was an audiocassette. I used a drawing tablet, which was not readily available to the general public until the past few years and had not received much attention up until the arrival of the Apple iPad. Unlike computers in school, technology at home was cutting edge, and the activities I engaged in and applications I explored came with few directives. My father would show me basic commands or actions, and then I would explore. I moved in and out of the different menus in the various programs, which were far more advanced than what we had at school. I created things—artwork or music, using the programs he introduced me to. I did this for hours without direction until my creative energy ran

out. There was never a prescribed end to my activity. I tried things and saw what happened. While finished products may or may not have emerged, I was learning to be a fluent technology user by experimenting with my father's machines. Before there even was such a term, I was a "digital native" (Palfrey and Gasser 2008), but this was just my life at home.

By the end of high school, I was sick of using computers in school. I could never remember the right words or commands. My exploratory tendencies from home were useless, and school technology killed my motivation to use computers at all. In the 12th grade, I begrudgingly took a course in computer robotics because it was the only course I hadn't yet taken that fit into an empty time slot in my schedule. And yet during that same year, outside of school I worked on a computer project at the College of Staten Island. On my own, I used a computer software program (AuthorWare) to capture video from a silent cartoon, develop subtitles, overlay them onto the video, and then create an interactive multimedia CD-ROM tutorial that was designed to help American Sign Language students differentiate between English verb tenses. A year later, when I was in college, blissfully free from the mind-numbing computer use of my K-12 school years, my CD-ROM was still being used by people at the college, and it had also been translated into Chinese. Yet, I also still believed I didn't know much about technology. Technology use was part of my habitus (Bourdieu 2003), but this was invisible to me because it was ever-present in my home life, while also an ever-present contradiction in my school life. Home technology use had nothing to do with "real" technology learning in school because it was organic with no stakes involved, and if I made a mistake I tried again later. In traditional classroom settings, my organic technology knowledge was useless, detrimental even, because if I explored the technology in school, I was downgraded for being off task or making mistakes. I learned quickly that I was not good at using technology in school.

After high school, I walked away from technology for six years during college and graduate school. I used computers only to type papers and check email. I recall one class, not even a whole course, during that time that involved technology use. It was a writing course; our professor showed us how to use Microsoft Word to create columns, insert images, create titles, and add text boxes in order to make our documents look like newspaper or magazine articles. Aside from that, I didn't use technology in school for six consecutive years; that is, until 2000, when a family friend asked me to teach a *Computers for Teachers* course for the Computer Science department at the College of Staten Island. My social and cultural capital reeled me back into the same technology world I had tried so hard to walk away from six years before.

Before *Computers for Teachers* began, I was given a textbook, a syllabus and course materials created by someone else and was told to "just go for it." I had previously taught college English. I had no experience using computers while teaching. I had no experience teaching teachers and barely any experience with the applications I was teaching (MS Word, Excel and PowerPoint), but I drew from my

habitus and taught myself how to use the technology. Then I drew from my own K-12 past when devising my pedagogy (point here, click there, double click here, click and drag, type this...). That first semester, I recognized that the curriculum was dumbed down and of the same rote learning style I had been exposed to in my own education, but I taught it anyway because that was what I was given. I wasn't confident enough to change it. The second semester, I still used guided instruction, but rather than having timed exams where the teachers created specific artifacts designed by me, the teachers developed portfolios which enabled them to apply their computer skills by designing and creating their own artifacts. Semester after semester I grew bolder, and I allowed the teachers more freedom to use computers to complete their own tasks that were useful for them as professionals, but this almost never resulted in any type of technology integration.

By 2002, when I began my doctoral studies, I was feeling less than adequate as a technology teacher. The computer integration that showed up in the books I was reading wasn't happening as a result of my class. All the teachers in my classes enjoyed my class, I got great evaluations, and they all found it very helpful for preparing their lessons or handouts. However, I had different goals, and so, I believed the "checked at the door" (Cuban 2001) rhetoric that permeated the educational technology literature. The technology texts I read (e.g., Sandholtz, Dwyer and Ringstaff 1997) told stories and gave illustrations of kids working diligently on exciting student-centered activities, during which teachers became "guide on the side" instead of "sage on the stage" (Warschauer and Whittaker 1997). Sometimes this occurred in computer labs and sometimes the kids worked in groups on a few classroom computers, but almost always, it seemed revolutionary. This vision is what I hoped my teachers' classrooms would become, but it was only the rare maverick that would change her pedagogy to resemble what happened in the literature. Even when I required the teachers to integrate technology through webquests, using instructional software, and designing lesson plans that incorporated technology, the impact on classroom practice was minimal because the technology was always added on.

Most often, the teachers applied their skills by creating artifacts to use in their teaching, or alternately, using computers for "center time," a reward, or an enrichment activity connected to a non-technology lesson. Technology use for most of the teachers in my classes was not a necessary part of teaching and learning in the classroom; although, it was a necessary part of preparing to teach a lesson. In their classrooms, technology was something that their students used when the real business of academic learning was finished (or nearly finished). In hindsight, I recognize that the ways in which the teachers opted to use technology did not actually differ much from my own use of technology, except, the focus of academic learning in my room *was* technology; whereas, in the teachers' classes, it wasn't. In my class, teachers learned skills and then applied those skills. Even though I divided my class into instruction time and lab time, the structure of the class was still very traditional. I drew from my home-life capital when using technology for achieving my own goals to prepare for my classes; yet, I ignored that same capital when preparing my

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lessons, which closely resembled the classes I took as a child. In this regard, the teachers and I were not very different in the ways we handled technology use in education; however, because I had my sights on integration, and because my courses were *about* technology, I could not see that at the time.

Revisiting the “revolving door”

In 2004–2005, when I conducted my dissertation research at the College of Staten Island and Brooklyn High School (Kress 2006), technology integration and closing the digital divide were obviously high priorities for me because of my unhappiness with the outcomes of my own courses. I believed that urban students were being shortchanged because they did not have access to technology that could enhance their education and prepare them for college and the workforce (Moore, Laffey, Espinosa and Lodree 2002). From working with teachers I did not think this was the result of a lack of skills. The teachers had all taken classes and gone through various professional development sessions without much resulting change in their pedagogy. Perhaps, instead, it was a matter of teacher identity (Roth and Tobin 2007), or perhaps a community of practice was needed for support (Wenger 1999), or perhaps it was a matter of culture and structure and agency (Sewell 1992), but I believed something was happening that created a “revolving door” effect whereby technology would enter the classroom and exit as quickly as it came. By examining these other possibilities, I wanted to find a way to better facilitate the technology integration process. Providing teachers with a community of practice focused on using technology in education in inquiry-based ways seemed to be a logical step toward doing that.

Thus was born the English/Technology Curriculum Writing group at the Discovery Institute at the College of Staten Island/City University of New York. My goal was to provide urban teachers with what I saw as a much-needed community in which to explore technology, and produce a teacher/technology culture together. Consequently, the goal was to re/construct hybridized teacher/technology user identities. This design was based largely on the work of Tobin, Elmesky, and Seiler (2005) in their use of cogenerative dialogue (cogen) to improve classroom learning, combined with Wenger’s (1999) notion of communities of practice and identity. In Tobin, Elmesky, and Seiler (2005), the authors explain the cultural production of the group and identity construction of individual and collective leads to a process of “cultural transfer;” whereby, participants will carry new culture from the group back to other fields of their lives. This process of engaging in a “cultural seedbed” has the potential to transform the culture of urban classrooms. Similarly, Wenger explains that people’s identities are fashioned by their association with various communities of practice; thus, one’s practice is more likely to change with the support of a learning community that shares similar goals. Perhaps, I thought, this was what was needed to help teachers integrate technology. And perhaps, by using video microanalysis and discourse analysis, I could shed light on the ways in which teachers participated in a

learning community and reconstructed their identities as teachers/technology users. I wanted to document the usefulness of an alternative to traditional professional development models.

Carol's story

After I began working with the curriculum-writing group, I selected a single teacher, Carol, to observe and interview while she redesigned her curriculum during the school year. I chose to follow Carol's progress because she considered herself to be a novice computer user, but she was very dedicated to learning how to use technology so that she could in turn teach her students. She was a Ramp-up/literacy¹ teacher at an "Impact"² high school in a working class neighborhood in New York City, and she considered herself to be "computer illiterate." For Carol, computer use had not historically been central or even present in her life, but she recognized the advantages of using computers and the Internet for academic work, while also recognizing the difficulties of it for someone who is inexperienced. In addition, prior to becoming a teacher, she worked for a moving company, and she saw similarities between the movers she had worked with and the students in her literacy classroom. She believed that many of her students who were lower-income, from minority backgrounds, and who struggled with reading and writing would be at an additional disadvantage after they left high school if they were not also technologically literate. She was determined to develop her own computing skills in order to incorporate technology into her lessons and provide additional opportunities for her students. Even though she had no one to guide her in her technology use, she kept plugging away at it and trying new things on her own.

Carol's school housed a population of students that was more than 50% African American, approximately 25% Latino(a), 15% Asian or Asian American, and 5% white. Many students came from lower-income or impoverished households (approximately 80% of the students were eligible to receive free lunch). While the school was only 50% African American, Carol's literacy class was nearly all African American with a small number of Latino(a) students. Because of low standardized test scores, graduation rates, and student enrollment, New York City High School (NYCHS) was labeled a "failing" school by the New York City Department of Education. Furthermore, as is often the case with troubled urban schools, NYCHS was plagued with frequent turnover in the faculty and staff; the school had seven principals in eleven years (from 1997–2008), one of whom was there for four years; all the others had only lasted one year.

FINDINGS

For anyone who has worked in an urban school or with urban teachers, my findings will not be terribly surprising. Not having a community of practice in her workplace was only a tiny component of the challenges Carol faced while integrating

technology. The difficulties she encountered had as much to do with the realities of urban schooling as it did with learning how to use technology (Kress 2006), and while having a community of practice to work with was helpful (particularly for developing self-esteem and gaining new ideas), it was not enough to truly support her attempts to integrate technology in her school. For example, computers were not easily accessible because they were in a locked computer lab, to which very few people in the building had keys. Computers were often in disrepair in the lab; students would frequently lose their work; and there was no technical support because the technician was also a full-time teacher in the school. Simply navigating the hallways with the students to go to the lab created anxiety because of the high surveillance in the school and Carol's fear that a) her students would have run-ins with the school police, or b) her students' misbehavior would reflect badly on her. As a result, Carol always kept an eye on integrating technology into a scripted curriculum, while monitoring her students' behavior and achievement, and being mindful of her own image as a teacher in a high surveillance and high accountability school climate. The fear of scrutiny and the urgent need to adhere to school regulations often served as a deterrent to using technology at all. Carol was pulled in many different directions at once, which forced her to prioritize her goals as an educator, and sometimes technology integration appeared at the bottom of the list.

The school culture created difficulty for Carol when she tried to include technology in her curriculum. Even though her efforts resulted in, for the most part, enjoyable learning experiences for her students, they never really became an integrated part of classroom practice. In the end, the overall outcome was not entirely satisfying for her. However, the ways she navigated the challenges that arose from integrating technology in her school displayed quite a degree of ingenuity and determination; she applied her agency in ways that often meant negotiating between her goals as a teacher, the goals of her students, and the culture of her school. Carol's quick responses to arising obstacles (like locked doors, student confrontations, high surveillance, or technical problems) showed that being fluent in the culture of the school was just as, if not more, important than being fluent in technology use. Carol, however, internalized many of the challenges she encountered as having been the result of her own incompetence as a technology novice and new teacher. I did not share the same sentiments as Carol because I knew that she did the best she could with what she had, given the circumstances, but I too was a bit disappointed with the results. Eventually, Carol's motivation to incorporate technology dissipated, and by the time I completed the dissertation, she had stopped using the computer labs entirely except on a rare occasion. She had, however, installed her own computer from home in her classroom. While I mentioned this in my dissertation, it had seemed an insignificant action at the time. In hindsight, however, that act was very telling. Carol's motivation had not gone away entirely after all. By bringing her own machine into the classroom, she was able to continue to provide her students with access to a computer. At the same time, the locus of control remained in her room,

and she would not have to battle against the structures of the school. My grand vision of what technology integration ought to look like prevented me from seeing just how important that act was for Carol and her students.

Surveying the educational technology research landscape

Since the conclusion of my research with Carol, I have changed jobs and locations. I no longer teach *Computers for Teachers*, and I get irritable whenever I have to read the educational technology literature. Partly, this is because there is no longer a direct connection to my job, so the literature is not immediately relevant to what I do. As an assistant professor in a doctoral program for education leadership, my students' interests vary widely, and I must read and be knowledgeable about a wide range of literature and theory, educational technology is a very small part of that. For most of my students, technology doesn't emerge anywhere near the top of their list of priorities. Nearly all of them work in underperforming urban schools that don't have consistent access to working technology. Even if they did have access to working technology, many teachers I work with are faced with wave after wave of administrative turnover and whole school reform. Technology integration is just not a high priority when they are afraid of layoffs while trying to survive constant instability. Consequently, I find literature about policy and critical social theory much more useful for thinking about the deep systemic issues that urban teachers and learners grapple with on a daily basis.

If, however, I set these deep structural issues aside and try to focus just on educational technology, I still find myself struggling to overcome the limitations in the body of literature. First, given just how much literature exists about technology integration, the majority of these studies are not about urban schools, urban learners, or urban teachers (see DeGennaro and Brown 2009 as an example of an exception). Under-resourced urban schools are continually positioned at the margins, and the literature has little relevance for teachers and students in urban areas. As an example, Journell (2009) states that his research "operate[s] under the assumption that most schools in the United States can provide stable computer and Internet access to their students" (p. 56). This assumption is simply unrealistic when considering technology use in urban schools. Second, in all the literature I have read, I have yet to find any that approaches technology use as an organic part of learning. Some literature explicitly talks about constructivist (Mitchell 2007), student-centered (Norton 2008), or project-based (Hofer and Swan 2008/2009) approaches; meanwhile, learning outcomes are still orchestrated and directed by the teacher. Even when the technology infused activities are "successful" and students are engaged in and motivated by the learning activities, the actual activity itself is still not authentic in the way that technology is used outside of schools (e.g., Norton 2008). In other words, my own tendencies toward organic technology use that I developed as a digital native at home more than twenty-five years ago would still be marginalized in many school settings, and especially in

urban schools like Carol's. This in itself points to a contradiction between what it means to be technologically fluent outside of school and to learn to use technology in school.

Furthermore, the types of technology promoted in the literature are changing very rapidly; however, the actual vision of technology integration has not changed much over the last ten years. As I have further removed myself from the educational technology community, it is becoming increasingly apparent that authentic moments of organic, student-centered learning occur when students are able to or encouraged to experiment with and appropriate technology in unexpected ways to meet their needs in the moment; yet, this is not usually the primary focus of the educational technology literature. When it does appear, it is usually an unexpected outcome within an activity predetermined by the researcher or the teachers in the study. For example, in DeGennaro and Brown (2009), urban learners who participated in an after school Digital Divide initiative adamantly resisted an imposed, inauthentic and dumbed down curriculum, to the point where their instructors were forced to come face-to-face with their own preconceived deficit notions of the learners in front of them. By resisting, the students refused to "learn" the demeaning curriculum that their instructors sought to teach; in effect, they demanded that they be respected as learners, which forced their instructors to completely redesign the learning environment. The agency displayed by the students in studies like this one illustrates the ways in which students can and do draw from their habitus to transform oppressive learning structures that are imposed upon them by others. This indicates that the students are actively recreating their learning environments and vying for ownership of their own learning, whether or not this agency is intentionally afforded by the structures that educators design. These types of agentic acts are not restricted to learning with technology; they can and do happen in all kinds of learning activities (see Tobin, Elmesky and Seiler 2005 among numerous others). I believe that our real challenge is to tap into students' desires to structure and direct their own learning. This will necessarily make learning unpredictable and nearly impossible to measure, which flies in the face of more than a century of U.S. education reform that is based on notions of efficiency and standardization. The potential for transforming education (with technology or without) into an experience that honors the knowledges that urban learners bring to the learning environment does not lie in the predetermined outcomes we anticipate, but rather in the outcomes we don't anticipate when teachers and students create new knowledge organically together.

Change of context, change of tune

Presently, I am conducting research at a small school in Boston, which could easily be classified as an apartheid school (Kozol 2005). The student body is 95% Black with small populations of Latino(a) and Asian students. The number of White students is so small that they do not even comprise one half of a percent of the total student body. And in fact, in all the times I have been there, I have not seen a White

student, only White teachers. The school is a Title I school with more than 80% of students living in lower-income households. In this school, which I will call Urban High School (UHS), I have seen three computers. One was in a faculty office, and the other two were at the teacher stations in classrooms. Although computers for students aren't immediately visible in this school, they do exist, and they are housed in three computer labs. One lab is an "open lab" that can be used by any teachers and their students, and the other two are relegated to the Business teachers who teach their classes in these rooms. All are in a state of disrepair with fewer than half of the outdated machines working at any given time. Teachers and students make do with what they have, because getting a technician from the Boston Public Schools central office to repair or update the machines could take six months or more. On paper, however, there is a 5:1 student to computer ratio and consistent Internet access.

To be truthful, when I go to UHS, my primary interest has nothing to do with technology. I go there because I am conducting an ethnographic study about the Young Researchers Club (YRC) (see Kress 2011a and Kress 2011b), an after school club initiated by Av, a teacher at the school and my former doctoral advisee. It is a spin-off of a "Social Activism" course he taught (and I co-taught on occasion) in the 2008–09, school year. In this course, students designed and conducted research that investigated the culture of their school. At the time, this was a pressing concern for both students and faculty because the school had been labeled "failing" for several years in a row and was going to be restructured at the end of the year. Restructuring in this case meant merging with another "failing" small school that was housed in the same building. Technically, they would be a new school, but many aspects were the same e.g., many of the same students and faculty, similar patterns of enacted culture (and its associated challenges). Both the class and the after school club (now part of the new school) were designed to be places of empowerment within a school where students are often disempowered by virtue of deficit perspectives, curriculum mandates, and oppressive school rules. In these extracurricular spaces, the students take charge of their own learning by conducting research that emerges from their own interests, relates to their lived experiences, and is action oriented. My readers may hear similarities to YPAR (Youth Participatory Action Research) (McIntyre 2008) in this description, but a critical component to this initiative, which is not necessarily included in all YPAR projects, is the students' engagement with the same critical social theories with which teachers and administrators in my doctoral program engage. The students work with ideas from the likes of Pierre Bourdieu (2003), Paulo Freire (2000), Jonathan Kozol (1991, 2005), Pedro Noguera (2003), and others, as they identify and name the social structures that reproduce inequality in society and in their lives. They dialogue with the theories using their own experiences and ways of knowing as urban organic intellectuals as they begin applying their agency towards changing their lived realities (Kincheloe and Hayes 2006).

Technology is not the focus of what the YRC does. When technology comes into play, it is a tool and only a tool. Technology is used to complete specific tasks and reach specific goals that the students want to achieve, which have little to do

with technology and everything to do with engaging in their own education and envisioning a more just society. In the moments when it is timely and appropriate to use a particular technology to accomplish a task, if the students need instruction their teacher will provide them with instruction; however, technology instruction is not (and cannot be) a premeditated act when the learning is being driven by the students' needs as they occur in real time. In this space, technology use does not dominate; rather, it is aligned with authentic practice that you see in work environments. It facilitates and enhances what the students already do and the knowledge they construct. Because of this, and because of the small number of students in the group (eight), the students easily share a single computer, the teacher's station, to do what they need to do. In some ways, having a computer for each of them might actually be counterproductive for them because a) this would imply that learning is an individual activity, b) it could undermine their own knowledge production by providing easy answers from "experts" on the Internet, and c) it could place emphasis on creating finished products by using the computers while deemphasizing the importance of knowledge creation itself. As the YRC currently functions, learning is a collective activity and knowledge is negotiated and created by the group through discussion. In this type of learning environment, I am not sure that technology use, as it is often presented in educational technology literature, would be especially helpful; it may even hinder the flexible and organic learning environment that exists in the YRC. This is not to say that technology shouldn't be available; rather, it is just one resource among many that the YRC turns to for accomplishing their goals.

TECHNOLOGY ON THE PERIPHERY

As controversial as this will sound, given the agency that this group of students has thus far displayed in directing their own learning without much technology use, I have come to believe that technology integration (or lack thereof) in urban schools is not necessarily a problem in itself. There are bigger issues that technology integration is embedded within, and while it should not be ignored, technology integration is perhaps not the first place we should be focusing our attention. If we see technology the way folks outside of schools (i.e., in workplaces or other social settings) see it—as a tool—then it is simply one resource alongside other resources. Therein lies the problem; “When one set of schools is given the resources necessary to succeed and another group of schools is not, we have predetermined winners and losers” (Duncan-Andrade and Morrell 2008, p. 1). Urban schools are chronically under-resourced, so the fact that this particular resource is nearly absent and when present is often antiquated or in a state of disrepair, should not be surprising. We could easily replace the word technology with the words textbooks or science lab equipment or rigorous curriculum, and we would have essentially the same scenario. Insufficient access to technology (or textbooks or lab equipment or rigorous curriculum) is just one symptom of a larger malady, which is that many urban schools are at a severe disadvantage when it comes to educating students (most of whom are lower-income

and minorities). This disadvantage is the result of a “systemic structural design that essentially predetermines their failure” (Duncan-Andrade and Morrell 2008, p. 1). Furthermore, within the present high-stakes climate, the curricula of “failing” urban schools are increasingly regulated by strict policy mandates causing these spaces to become hostile environments that perpetuate rather than alleviate social inequality by limiting urban students’ exposure to authentic learning, with or without technology (Duncan-Andrade and Morrell 2008).

When looked at in this way, the digital divide in schools is just another piece of the Achievement Gap puzzle. While I do not deny that urban students are further disadvantaged when they are unable to access computers in schools (Tobin 2005), particularly since many students may not have computer access at home, we cannot overlook that they are also disadvantaged in other pressing ways. For instance, many urban students are denied access to a high quality curriculum that is rigorous, culturally relevant and personally meaningful because of the emphasis placed on providing remedial education for improving standardized test scores (Romer 2006). As Duncan-Andrade and Morrell (2008) poignantly explain, “This is where urban school reform has missed the mark. It presumes that urban schools are broken. Urban schools are doing exactly what they are designed to do” (p. 1), which is deskilling teachers and students, police urban kids, force compliance and conformity, and justify this maltreatment by perpetuating deficit perspectives via the discourse of standards and accountability and the use of standardized tests for measuring so-called “achievement” (Kincheloe and Hayes 2006). Thomas (2009) further explains, “We must recognize that the ‘failure’ we often associate with the achievement of impoverished students does accurately describe that disconnection, but not necessarily the student intellect” (p. 6). The educational disconnect that results from deficit perspectives that permeate all facets of education from policy down to pedagogy cannot be fixed through technology integration because it has little to do with technology.

A different approach would be to call into question the very terms achievement gap and digital divide, because both metaphors indicate that something is missing, like a broken bridge preventing passage to the other side of a ravine. The implication is: if only we use more of the proper materials that are thus far missing, we can fill these gaps, enabling underperforming students to walk across to the other side. Simply put, this is a smokescreen. What we have are not gaps; we have two separate systems of education that are inherently unequal and exist in two different worlds (Duncan-Andrade and Morrell 2008). No matter how much more basic literacy and math remedial filler (or technology) you add, you will not create a bridge between these worlds. Thomas (2009) urges, “In order to reach the goals we set for our schools and for the children who enter those schools, we must rethink the language we use, the assumptions we have, and the practices we implement both in our schools and in the greater society around those schools,” and we must “move away from deficit models and toward the ‘generative’ classrooms that all students deserve” (p. 4). Deficit-laden structures that are in place in urban schools set students up for failure as compared to their more advantaged peers in other geographic and socioeconomic

locales. “[L]ow achieving students who are disproportionately children of color and from impoverished backgrounds do receive the most traditional and narrow forms of instruction and assessment—year after year—while the accelerated students receive more progressive instruction and assessment” (Thomas 2009, pp. 12–13). Wenglinsky (2005/2006) illuminates this disparity in regard to computer use in schools in his study about NAEP history scores. He explains, “The more time students used computers for schoolwork outside of school, the higher they were likely to score on the NAEP history assessment. The more time they used computers *in* school, however, the *lower* they were likely to score on the NAEP” (p. 32). His findings suggest “teachers can make better use of computers by having students complete such assignments at home rather than at school” (p. 33). His findings also show that the largest determining factor in achievement was students’ socioeconomic status, not their use of computers.

When unequal structures are pushed aside, we encounter contradictions that illustrate just how much urban students are capable of when not being bombarded by policy that attempts to “normalize” while always norming them against their more socioeconomically privileged peers (Kincheloe and Hayes 2006). As a prime example, several of the YRC students are also on the school debate team. Urban High has been a “failing” school for several years, but the debate team won second place in the state the year before the merger and won first place in the city the year of the merger. These are not “failing” students, but they do not perform consistently well on exams, and they do not receive “A’s” in all their classes. On paper, they do not “measure up” when placed side-by-side students they debate against who live in more affluent areas. A contradiction such as this points to inconsistencies in the hegemonic logic of AYP and urban school reform in general. These students can and do outperform their peers when provided with structures that enable them to do so. This new perspective has forced me to question the value of many technology integration initiatives and their corresponding literature (including my own dissertation) as they relate to the realities of urban education. As a result, I have chosen to shift my attention elsewhere, namely toward devising ways to subvert oppressive school structures and create organic and empowering learning environments (with or without technology) for urban students. In the case of the YRC, given the strict sanctions on the curriculum of their newly restructured school, the only place this type of learning can really flourish is in an after school setting. As an extracurricular activity, it is outside the reach of the distorting influence of oppressive and repressive education policy. While ultimately I would like to see these types of opportunities during the regular school day where they can be available to all students, I also recognize that in the present educational Zeitgeist this is nearly impossible. It is also unlikely that this will be possible for years to come.

CONCLUSION: SINGING A DIFFERENT TUNE

I have come to terms with fact that in 2004 when I began my own dissertation research, I walked into it with preconceived notions of what technology integration should look like. Largely, they were based on deficit views of *all* learners, not just

urban ones. This was shaped by my own contradictory childhood experiences where I too had been positioned as deficient; it was then exacerbated by my readings of the academic literature, which positioned *both* teachers and learners as deficient. I recognize now that my own technology use does not and has not ever looked like the technology integration that has for years been promised in the literature and was force-fed to me in school. I use technology every day, but I also read books, and I talk to colleagues. I don't sit at my computer and think, "today I am going to create a PowerPoint presentation about X." Instead, out of necessity, I create PowerPoints about the ideas in my papers when I need to present those ideas to an audience. The technology punctuates and communicates, but it does not shape the foundations of my ideas. However, my reading, conversations with students and colleagues, and writing are undeniably foundational to the development of my ideas. Technology has become a central part of these activities, but as a means of more quickly or efficiently accomplishing the task at hand. If I think about technology use at all (of this, I am uncertain because technology use is fairly automatic), it more resembles "I need to know about X; I will Google it, or I will ask a friend about this." I then decide on the best course of action, and I use the technology to accomplish my goal. Such has been the case my entire life as far back as when I was a child—but outside not inside school. Herein is where I believe the technology integration disconnect resides, regardless of whether we're talking about urban or suburban schools. When technology use in schools is planned and not connected organically to learning, students are prohibited from making their own judgments about when and how to use technology as it relates to their goals as learners; in other words, they are prevented from being technologically fluent. In this way, technology use becomes decontextualized and inauthentic, just like much of school learning in general because it is unnaturally segmented into discrete skills that have no direct application in the real world.

The natural questions that arise at this point are: so what does this mean for urban teachers and learners, and what do we do now? Clearly, ignoring technology is not the answer because that in itself perpetuates disadvantage for students who are already at a constant disadvantage. And yet, clearly, creating more computer labs and adding more machines isn't the answer either, nor is providing more training and professional development for teachers. At this point, I believe that several things need to happen to make education more equitable for urban learners, all of which involve a serious rethinking regarding the purpose of education as well as a decentralization of power in educational settings. First, learning in general needs to become more authentic. This means allowing teachers to create their own curriculum based upon their students' needs and their judgment as professionals. It also means cross-disciplinary learning and larger blocks of time for learning. These suggestions are not earth shattering. John Dewey talked about this in the early 1900s, Paulo Freire and Maxine Greene in the 1970s, Henry Giroux in the 1980s, and countless educators are talking about it in the present. Once we catalyze these ideals, then we can start thinking about how to use technology; otherwise, learning

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with technology will continue to mirror learning in any other subject because this is how our educational system is designed. If technology is to be used for “generative” rather than deficit learning (Thomas 2009), it needs to be available for students to use when it is timely and appropriate (i.e., organically and fluently), not just when it is planned by the teacher as a whole class exercise, or as an add-on project. I understand how unrealistic this sounds given the current political climate. This is why for now, I sing my different tune in a marginal after school space where the opportunity to thrive as organic intellectuals and to use technology to achieve their own goals is available at least to some students.

NOTES

- ¹ Ramp-up is a packaged literacy curriculum for underperforming students that is mandated by the New York City Department of Education.
- ² The Impact schools program was explicitly modeled after the NYPD’s “Operation Impact” which involved using a computer system to identify, target and police high crime areas of the city. Impact schools were identified by “high risk” markers such as low attendance and graduation rates, low achievement scores, and higher than average violence, after which they would be assigned extra school police officers and advances surveillance technology.

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KATE E. O'HARA

5. UNRAVELING TECHNOLOGY USE IN URBAN SCHOOLS

Abstract The use of technology in urban schools is multidimensional, layered in complexities yet too often it is viewed as one-dimensional, void of context, with cultural, social, political, economical and ideological forces that impact the use of technology by both students and teachers rarely taken into account.

This narrative account, told through a critical and theoretical lens, does not aim to solve problems that are presented but rather dissolve the one dimensional view of students and teachers using technology, thus presenting challenges in a new light with the possibility of working toward solutions that are unique to the urban classroom. However, in order to work toward solutions it is crucial that as teachers we act as researchers, critically reflective of our own practice. By doing so, we can share our stories-- and in sharing our stories we bring to light the ways in which technology can serve as a medium for the empowerment of both students and teachers.

This chapter reflects narrative and auto-ethnographic research in secondary New York City schools and classrooms. Couched in social and critical theory, it is an examination of the complex relationships that arise when students and teachers use technology in urban classrooms. This narrative exposes the significant impact and implications that critical teaching and critical research has on the use of technology within educational frameworks. And, the empowering potential of effective technology use by students and teachers is discussed as well.

THE EMERGENT CRITICAL TEACHER

As I walked through the door of my third floor classroom, I felt the chill of the winter air coming through the cardboard I had taped to three broken windowpanes. I was hoping they would be repaired over the holiday, but they weren't. Before we left for vacation, some of my eighth-graders decorated the rough brown cardboard square surface with ink markers, splashing bright strokes of color around the words, "Happy New Year 1996," which they had written in bold purple. But instead of panes of glass, there was a new addition to the room; four old Macintosh computers, scratched and dusty, locked down individually to metal rolling desks. They were lined up close to the radiator, using up the last remaining amount of room next to the rows of 34 desks. Having never used a computer before, I was hoping their arrival was a mistake. My assistant principal informed me that they were in "pretty bad shape" but I was welcome to fix them and use them as a reward with my "good"

students. The “good” students the assistant principal was referring to were those grouped homogeneously, passing standardized exams and reading and writing at the appropriate grade level. What I chose instead, much to the dismay of both the administration and my colleagues, was to let my special education class use them. “Are you kidding, they’re going to wreck them.” “Don’t reward them for acting like idiots.” “Why would you do that? Give the good kids a break.”

My decision was based on my four months of experience with my special education class. The class, consisting of seven 13, 14, and 15 year old boys with emotional and behavioral problems and learning disabilities, met the last period of the day on Wednesday and Friday afternoons. I was not officially “certified” to teach special education students and had no academic or experience in teaching students with special needs; but as a new teacher, if I wanted my job I was to work the assignment I was given. And by law, I was required to have a paraprofessional assist me during class time but for one reason or another, she was rarely present. Since September my time with them was challenging to say the least. They were quite rambunctious, frequently getting into verbal and physical arguments with one another and my attempts to have them complete any activity related to reading and writing was met frequently with a barrage of “This sucks.” “I ain’t doing this shit.” “I’m too tired.” “I hate this.” But as the weeks progressed and our relationship developed, I knew and they knew that their education was not “special.” Yet we had a lot in common; indoctrinated by a school system that assumed distinct roles of the teacher as the expert and authoritarian, and the student as the passive recipient of information, we knew our script was already written. But, the more I varied from the traditional script, the more motivated and focused they became. Too often as teachers, without reflective practice, we “evaluate students not to enhance our practice but to punish them” (Freire 1998, p. 7). In this instance, the punishment for not being able to read and write on grade level was to be denied technology – a tool that, if used effectively, could in fact help them to read and write. When describing “effective” technology use, I am referring to the use of technology in the classroom that in some way positively impacts the learning process. It does not relate to technology that simply replaces a more traditional means of doing things. For example, having students use repetitive drill software, accessing online multiple-choice exams, or write their essays on notebook paper to be then painstakingly typed with word processing software. Or teachers, opting to create PowerPoint presentations filled with text rather than writing on the chalkboard or using a SMART Board to merely project videos or images rather than utilizing its interactive features. To be “effective” the technology must be used as a meaningful, engaging, instructional tool that aids students in collaboration, knowledge creation, and a medium for problem solving and critical thinking.

My students were given simple and repetitive means of instruction; copying directly from notes on the chalkboard or from pages in textbooks so that they would “keep busy and settle down,” memorizing long lists of spelling words, working on handouts that were filled with multiple choice or fill in the blank questions. And, it should be noted that this type of “teaching” is not exclusive to special education

students – this “teaching” takes place in general education classrooms as well. I have witnessed teaching that is reduced to students taking part in activities that require simple feedback or regurgitation of information rather than being engaged in activities that give them the opportunity to analyze, interpret or create. So instead of thinking of ways to get rid of the computers I had no experience using, I decided to think of ways in which they could be incorporated into our classroom practice, with the help of my seven students.

The best day of the year thus far arrived after a week of hearing, “Yo Miss, when can we use the computers?” I was honest with them and said I needed time to look at them, perhaps even fix them, and then set them up for use. But then I thought, why couldn’t they do that with me? It was on that day I began with 10 to 15 minutes of direct instruction or modeling followed by, “help me fix the computers.” The results were unbelievable. They were incredibly enthused. They helped me clean the monitors, repair keyboards, and explore the software. A few students who were not interested in helping sat quietly and played a vocabulary game similar to PacMan on one of the computers that was working. With no directions they were able to figure out how the game operated and then shared those rules of the game with the rest of us. Within weeks of our new routine, the dean from across the hall came in because he “heard the silence” and was hoping everything was all right. And, everything was more than all right.

Thanks to a young man named ‘Jonathan’ that winter I learned to use presentation software and with that experience, a few years later in my career I was able to make an easy transition to using PowerPoint. Jonathan was a student frequently absent from school. He had a reputation with teachers in the school for “not caring” or for “not being interested in learning.” But when I asked him why he never came to class, he had several reasons for his absence; “in jail,” “home helping my mother,” or “just didn’t feel like coming.” On a day he was attending school, he happened to stay for my class. It was the week we started fixing computers. Within minutes, it was clear that working with computers was natural for him. He was actually dumbfounded when I asked him to teach me a few of the software programs. He had been playing around with one in particular: HyperStudio. I had read about HyperStudio and understood it to be a software application that allowed one to create multimedia presentations or electronic portfolios, but I had never tried it. I simply asked him, “Wow, how did you do that?” and proceeded to sit down next to him.

From there the other students joined in, extraordinarily excited to show me what they knew or discovered. With their help, I was able to gain a sense of the capabilities of the software and began creating lesson activities that enabled my students to use the programs effectively. Instead of the recommended “reward” of using drill-software, I set up a curriculum plan in which I would teach for the first part of the class and then let the students use the computers to work on their corresponding projects; using painting software for artistic responses to literature, creating slide show presentations about a story’s main character, using formatting features of word

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processing software to add an aesthetic element to original poems, and hyperlinking words in their descriptive paragraphs to photographs and graphics.

After several weeks, I began to incorporate the use of the computers in my teaching with my other eighth grade students. And whether it was my special education or general education classes, it became clear to me that the technology I was using enabled me to inspire and motivate students and turn my once traditional classroom into a community of engaged learners and critical thinkers. Its use positively affected issues of classroom management, inclusion of students with special needs, bilingual students, and struggling readers and writers. It was the medium that began to change my way of teaching and my students' ways of learning. But, it is important to again note that it was the way in which the technology was used, not the technology itself that facilitated the change in my classroom. The technology in this context was a means for me to teach in ways that challenged the traditional role of teacher and student, or the "banking concept of education" (Freire 2005). And although I wasn't able to articulate it at the time, I knew the traditional means of "depositing" information into my students as they passively received, memorized and repeated isolated pieces of information, facts and content, greatly fell short of authentic teaching and for my students, true learning. This method stifled creativity as well as any opportunity for critical thought or reflection. However, it was the use of technology in my classroom, which enabled me to exchange my role as depositor for the simultaneous roles of teacher and student. Through dialogue and "problem-posing education" I was able to shift from the banking method, removing myself from the role as the sole teacher, to one who is also taught. However, this transformative shift in my teaching approach would soon be challenged.

CHALLENGES OF CRITICAL TEACHING

Years later when I accepted the opportunity to teach at the high school level many of my previous instructional successes at the middle school level were over-shadowed by the frustrations that are all too common to those working within the New York City system, including: lack of technology resources, overcrowding of the student population, high absenteeism of both students and teachers, and the lack of parental and community involvement. Because of the top-down supported power relations within schools, I was not able to implement many of the technology-integrated methods and curriculum-based ideas that I had acquired through my middle school teaching experience. At the middle school level there was a strong push to "teach to the test" but at the high school level, the curriculum I was asked to follow was scripted and filled with a list of topics that were to be covered on the New York State Regents Exam.

Although there is a need for assessment and evaluation in any learning process, the idea of teaching decontextualized bits of information that aim to meet a particular learning standard or reflect a standardized test exam question was futile. Assessment forms such as these fail to take into account the complexity of the classroom, teachers' professional roles and students' diversity. Now, because I had

to cover given topics before the Regents Exam was administered, I was not able to take the time I had in the past to read with my students or more importantly, talk about what we were reading, why we were reading it, as well as our opinions about what we were reading. As a teacher, I was expected to transfer “knowledge” to my students in the form of notes, worksheets, and independent reading, followed by answering a series of questions found at the end of each textbook chapter. My supervisor acted as if I was doing my students a disservice if I didn’t “give them everything that was going to be on the test.” I felt frustrated and unable to express what I knew in my heart. If the goal was to successfully read and understand passages on the exam and answer questions in a critical light, then those goals needed to be reflected in classroom practice. This could not be achieved by having students repeatedly take previous years’ exams. The love of reading, the intrinsic motivation, the self-inquiry and the connections of text to personal life were missing; the high school classroom in which I worked did not have time for that. It was my job to give my students certain “important” pieces of knowledge. Unfortunately, my superiors and my colleagues failed to realize that knowledge is an active rather than a passive endeavor, and one does not need a final product in order to empirically determine whether or not success was achieved (Kincheloe, Steinberg, and Tippins 1999). But, it seems that a final product of a standardized exam “passing score” is the sole determinant of success for many. And although I do believe there is a need for benchmarks, assessment and evaluation, I take issue with the fact that their Regents test score was regarded as my students’ sole measure of success. All their academic accomplishments that took place in the months prior to the administering of the exam were quickly overshadowed by the revelation of a failing score. As critical teachers, we need to ask how is the passing score determined? What knowledge equates to a particular score? Who determines what is to be learned and who does the learning? And by whose standards are we judged? What knowledge is being aligned to the standards? Whose knowledge is being generated, and in what context? And, how does this knowledge relate to power?

In an over-crowded high school, in my fourth floor classroom, which was stifling hot in the summer and freezing cold in the winter, I worked within the constraints imposed by a bureaucratic system, surrounded by disengaged students, weary teachers and overwhelmed administrators. I tried desperately to incorporate technology into my classroom instruction, only to be told that “another class” uses the overhead projector, or that the computer lab, a separate room in which desktop computers, lined neatly in rows, was reserved for a select group of students, usually honors level or business students. As I struggled for solutions to the challenges I met on a daily basis, I felt powerless. My supervisors made it clear that my goals were not theirs; I was to prepare for the New York State Regents exam and maintain order by keeping the students busy.

Henry Giroux (1997) warns that there are risks involved in the struggle to teach critically, since there may be “structural and political constraints” as well

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as “enormous resistance” encountered and one might even “endanger one’s job” (p. 64). Within a few short months of teaching at the high school level, I began to feel the isolating effects of having a teaching vision that differed from that of my department chairperson. My chairperson would smile and chat with colleagues in my department, but never with me. When free resources such as textbooks or dictionaries became available and distributed throughout the department, I was told, “Sorry, we ran out.” When I expressed to a veteran teacher that I was starting to feel excluded and that I only wanted my lower tracked classes to use some of the technology available in the building, I was told, “Who do you think you are? You better clue in to what goes on here if you expect to stay.”

TEACHERS AND TECHNOLOGY USE: A STARTING POINT FOR CRITICALITY

The following academic year, I decided that my skills and experiences would be better utilized in a different capacity, and so I began work as a staff developer for a large kindergarten through eighth grade district in the Bronx. In this position I designed and implemented professional development programs for elementary and middle school, teachers of all discipline areas. Through on-site demonstration lessons, coteaching and multimedia projects I was also able to work in classrooms with students. From these experiences, the impact of effective technology integration on literacy and learning across disciplines became evident to me. Once again, the change in teaching and the ways in which students were learning what I had experienced in my own classroom, began to emerge in others. I witnessed teachers working side by side with their students, simultaneously learning the use of hardware and software but also working together discovering ways in which the technology was able to act as the tool to enhance and support the processes of teaching and learning.

However, similar to what I experienced as a classroom teacher, despite grants and federal, state and city initiatives, technology was a new and rare addition to schools. And, when it arrived, only a select few were allowed to partake in its use. Unfortunately, over a decade later, technology in an urban school building arrives in the hands of both students and teachers based on a variety of reasons embedded within a matrix of power relations present at the school level. Whether it be a SMART Board or one desktop computer with Internet access, the students that “get to use” technology, varies greatly. Those who are granted access and use might be the students in the gifted program, or the class of struggling readers, or the students working under a newly received ESL grant, or perhaps just the ones lucky enough to have the teacher who knows how to turn on a laptop or set up an LCD projector.

As far as the teachers who are fortunate enough to have access to the technology in their building are concerned, the reasons are just as varied. Teachers granted the use of technology may be those who have already had some prior training in the use of technology, obtained either on their own or as part of a district or school based technology initiative, or they may be the teachers who have simply expressed an interest in having technology in their classroom. To clarify, if a teacher does not

express an interest in having technology in his/her classroom it does not follow that s/he is “not interested.” Similar to my experience as a teacher of special education students, teachers are given technology without any training, support or resources to successfully implement its use into their classroom practice and yet if it is in their classroom, then they are expected to use it. But once in the classroom, the mere presence of this new tool can be overwhelming, creating a dynamic environment that sets both students and teachers up for failure when attempting effective integration. And sadly, a common reason for teachers in urban schools to have access to technology is simply because they are teaching in one of the few classrooms with working electrical outlets.

The above scenarios that relate to students and teachers using technology can be viewed through the lens of capital; economic, cultural, social, and symbolic (Bourdieu 1984). According to Bourdieu, economic capital relates to our valuables and possessions, cultural capital refers to a person’s training and competencies, social capital is reflected in one’s networks or personal relations, and symbolic capital refers to physical appearance and also one’s honor and prestige. Regardless of the situation, it is an individual’s capital that positions them in social space, and mediates their possibilities. In school-based instances, positions and possibilities associated with the access and use of technology are many. As teachers, it is essential that we look critically at the context in which technology is used, or not used, uncovering capital in order to work toward more equitable access for both students and teachers.

This critical look is crucial because throughout New York City, for every classroom that effectively uses technology for teaching and learning, there are many more in which a positive change has not emerged. In both the capacity of staff developer and at present, college professor, I work with urban teachers who are stifled by over-bearing administrations obsessed with standardized test scores, required scripted curriculum, and packaged remediation material from a preselected textbook publisher. To oppose related mandates jeopardizes teachers’ job security. In such circumstances teachers have even greater difficulty shedding their depositor role, to join with their students as co-creators of knowledge, critically reflective of schools’ rules, values, and culture, consciously articulating and analyzing the various relationships within the educational structure.

CRITICAL TEACHER AND CRITICAL RESEARCHER

The challenges both my colleagues and I were faced with as we attempted to use technology in meaningful ways for teaching and learning were multi-layered and at times quite overwhelming and frustrating. But it was through my studies at The Graduate Center, The City University of New York that I began to gain great insight related to the cultural, social, political, economical, and ideological forces surrounding my work, thus enabling me to critically view my own sociocultural constructed history and lived experiences as well as the histories and experiences of all those I encountered in my work at the K-12 district, school, and classroom levels.

This insight was also coupled with a maturing understanding of varying discourses that at times both enables and limits particular identities and individual capacities. When I began my doctoral studies, I wanted to explore the possibility of changing current public policies from within and begin to develop definitions of reading and literacy that moved beyond traditional text and included communicating in networked environments. I also hoped that I would research the issue of technology use in the classroom and how it aids in increasing student achievement. I soon discovered that top-down policy change was not necessarily the direction that needed pursuing.

Through my work in the New York City School public school system, I have found that although our schools are lagging behind for reasons commonly equated with urban areas, there are federal, state, and city grants and initiatives that bring technology into the classroom. Additionally, there is existing research that states that the infusion of multimedia in the traditional classroom can open the door for students to develop new Literacies, including but not limited to academic literacy, civil literacy, and media literacy. But for every study that generates these claims, there is an opposing one, espousing that technology use does not directly correlate with student achievement. However, what the research from both sides of the debate fails to address are the two parties at the very heart of the matter; students and teachers. Research cannot be separated from context; yet rarely the cultural, social, political, economical and ideological forces that impact both teacher and student use of technology are taken into account.

Research on students' use of technology often correlates to "student achievement." But what is student achievement? Who defines it? How is it measured? A closer look at these questions is crucial when examining student technology use. I have also found that research focusing on students' use of technology rarely acknowledges use by teachers. With the use of any new tool, there is a learning process, and teachers are not exempt from it. The arrival of new technologies in a school building is seldom, if ever, coupled with training for use of that tool. Ironically technology is constantly purchased as an item to be used for instruction but yet given with no instruction on how to use technology to enhance learning. Many technology based initiatives or grants provide initial teacher training at the opening of the project, but the training for teachers is almost never ongoing and sustained.

In *How Teachers Taught: Constancy and Change in American Classrooms 1880-1990*, Larry Cuban (1993) speaks of incremental reforms that aim to improve efficiency and effectiveness of existing structures of schooling including classroom teaching. Technology initiatives can be classified as such reforms. But, as Cuban warns, many of these types of reforms are never institutionalized and the overall mortality rate for classroom reform is high. But because I felt a strong desire that the integration of technology by classroom teachers could one day be encompassed within a fundamental reform, one that changes permanently what teaching, learning, and the classroom community looks like, within the first year of my doctoral studies I shifted my focus to that of the classroom teacher.

My vision, refocused to that of the classroom teacher, encompassed the idea that the use of computers and related technologies be included in the literacy curriculum for pre-service teachers. Adequate training and staff development should also be provided for in-service teachers so that they could effectively implement the use of technology in their classroom, thus increasing ways in which New York City school children will be exposed to and experience new literacies in order to be successful students, critical thinkers, and lifelong learners.

But, my revised vision was clearly multi-dimensional, and the more I learned, the more I realized the magnitude of the task that lay ahead. To make my vision a reality in the urban classroom I would face many obstacles; how could I help to provide and equalize adequate technology access? Or how could I involve a majority of teachers with practical, ongoing professional development? What about the technical support needed for technology use and maintenance? I recall vividly a semester in my doctoral program when I worked diligently on policy analysis and the creation of a policy action plan at city, state, and federal levels which clearly outlined the challenges as well as the possible solutions of implementing policy related to technology training for teachers. It was a thorough, comprehensive piece that only needed to be enacted; but after several long months of hard work, I realized I no longer believed my own policy. How would it possible for one technology integration course taken by pre-service teachers, followed by an in-service technology professional development, to significantly change the ways teachers teach and students learn? Continual review of research and literature uncovered the variety of reasons why teachers are not using technology. At the surface level, teachers hesitate to incorporate technology in their classroom routine, mostly because of a lack of time and a lack of resources, or a lack of confidence in their ability to use available technology.

And with this naming and communicating I began to form new understandings. New insights, couched in sociocultural theory, critical theory and critical pedagogy, coupled with an understanding of the history of education, practices of pedagogy, and the instructional use of technology allowed me to reflect on my own practice. But not pedagogy used as a synonym for teaching, but pedagogy that connects teaching with philosophy and social theory. It is pedagogy through praxis, or action and reflection upon the world in order to transform it (Freire 2005). With this belief as my grounding, I feel I have not only an obligation, but also an impassioned desire to create change within a system of complexities that defines a great portion of my life. "Connected, critical researchers sensitive to the complexity of the lived world are not isolated individuals but people who understand the nature of their social-cultural context as well as their overt and occluded relationships with others" (Tobin and Kincheloe 2006, p. 7). I will always define myself as both student and critical teacher, but with a strong focus on critical reflection, seeking out diverse perspectives, and confronting conflicting information, it was from this point I began as a researcher.

MAKING SENSE: CRITICALITY AND TECHNOLOGY USE

At present, the plethora of existing research regarding the use of technology for instructional purposes draws heavily from quantitative studies conducted in middle class, upper-middle class and/or suburban areas and does not adequately reflect the urban classroom. The studies are positivist, with a reductionist view, disregarding cultural and social influences. For teachers attending professional development sessions that have been designed on the basis of these studies, a heightened sense of discouragement and isolation sets in. Moreover, when looking at technology use it is imperative to view the technology itself through a sociocultural lens that is not merely defined as a hard-wired object but rather something which serves as a cultural tool that mediates learning within “zones of proximal development” (Vygotsky 1986) and aids in scaffolding instruction in order to articulate prior knowledge and internalize new information.

The theoretical foundation of my research in New York City begins by employing Joe Kincheloe's notion of “bricolage.” From Kincheloe's perspective, in the context of teacher-researcher, criticality is enhanced by a multilogicality that values diverse perspectives and insights gained by careful analysis of their intersections. Therefore, I use Kincheloe's overarching concept as a rigorous interdisciplinary approach, incorporating theoretical and philosophical insights but also recognizing differing methods of inquiry. In doing so, I aim to both problem-pose and problem-solve the complex relationship(s) surrounding the use of technology by students and teachers. This interdisciplinary approach is not to be viewed from the outside, looking in. As Kincheloe (2008) explains, “such multidisciplinarity demands a new level of research self-consciousness and awareness of the numerous contexts in which any researcher is operating” (p. 131). The process of teaching with technology, the process of learning with technology, the relationships that exist within that locality, the resources used for instruction and the decisions intermingled within educational structures are complex and fluid. Too often complexities of teaching and learning with technology are minimized to a one-dimensional act. Therefore, it is crucial that teachers act as researchers, reflecting on practice in their own classrooms and schools, so that change can be facilitated toward more equitable and meaningful technology use.

Social and cultural influences, as well as a comprehension of power's complicity are fundamental concepts to keep in mind as teachers reflect on their own practice as well as the practice of colleagues. I have found that my Bronx middle school and high school classrooms have both similarities and differences in comparison to classrooms in other geographic areas throughout New York State, as well as the United States. And, although there are even classrooms throughout the Bronx that may have profound similarities to my own, differences exist. When working with teachers, I continually recognize that the effective use of technology does not have one distinct way of being integrated into classroom practice. As mentioned earlier, the use of technology in the classroom is greatly impacted by availability of resources

and teachers' technical knowledge. Although I offer and model possibilities of effective integration, I also acknowledge that for a multitude of reasons, what works in one classroom may not work in another. The influences of the school's culture, discourses of power, and political ideologies, also have an impact on integration. And, these influences, unfortunately often leave teachers feeling discouraged and isolated.

In my current position I am afforded the rewarding opportunity of conducting professional development sessions that bring New York City teachers together, regardless of grade level or discipline area. In addition to learning about technology at these sessions, teachers also learn they are not alone in facing the challenges of working in a New York City school; over-crowded buildings, unsupportive administration, physical classroom conditions in need of repair and a lack of resources that include textbooks, paper and calculators. With this newfound camaraderie, teachers are not only able to share their challenges but work toward solutions in their districts, their buildings, and their classrooms. However, this by no means is a simple act. Despite the bravery and determination involved in doing so, there is also a pervading acceptance of the dominating social and cultural circumstances of their teaching lives. Even more frequently, teachers I work with are often not even aware of the hidden forms of oppression that surround them. For this reason reflection upon practice must be viewed through a sociocultural lens.

As mentioned earlier, it is essential to take into account factors of economic, cultural, social and symbolic capital, but also employ the notion of "habitus" and "field" (Bourdieu 1984) in our reflection. Habitus, which is the disposition to act, the social location that we internalize, our preferences, orientations, perceptions, is our way of making meaning in the world. It is our disposition to act both strategically and practically at the conscious and subconscious levels to meet our goals. Habitus generates action based on deeply ingrained past experiences to opportunities and restraints offered situations or structured social frameworks, called fields. In other words, habitus structures, and yet is also structured by the fields in which it is enacted. Habitus comprises our expectations for what kind of life to lead as well as how to lead our life. To disregard the concept of habitus and fields when looking at technology use is detrimental. Again, no two urban classroom teachers or classroom "fields" are alike. Since a technology integrated classroom can run parallel to that of the traditional classroom, a technology-integrated classroom that engages in imitative learning will follow the same teaching strategies despite the infusion of technology.

Considering that in an instructed learning (the traditional classroom), the teacher lectures or provides the students with detailed notes and the students remember the information and then use it to self monitor. Information and instruction are merely presented and the student is expected to "absorb." Technology use in this type of classroom would probably be similar and therefore ineffective. Many teachers sit their students in front of a computer with drill software programs that present information to be regurgitated by the student in some manner such as clicking a multiple choice answer or checking a box for true or false. With the strong, top-down

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focus of standardized exam preparation, technology use in this context “dumbs down” the curriculum and discourages teachers’ reflective practices.

The effective use of technology in a classroom engages the students in collaborate learning, and experiences. Research clearly indicates that cooperation, compared with competitive and individualistic efforts, typically results in (a) higher achievement and greater productivity, (b) more caring, supportive, and committed relationships, and (c) greater psychological health, social competence, and self-esteem. The positive effects that cooperation has on so many important outcomes makes cooperative learning one of the most valuable tools educators have (Johnson and Johnson 2005, ¶ 2). Technologies such as wikis or blogs or Web 2.0 presentation tools can serve as the effective medium to support cooperative learning. By using the cultural tool of technology in effective ways both students and teachers can begin to create new forms of knowledge that expose the dominant ideologies and discourses that shape their lives as well as “process of unlearning what has been transmitted to us as truth” (Kincheloe 2008, p. 138). And in the process of unlearning we must continually look through a critical lens.

TEACHER RESEARCHER IN ACTION

Currently, in the field of K-12 instructional technology, there are two preeminent authorities; Will Richardson and Alan November. My colleagues and I have looked to both to guide our work, explore innovative ideas, and see the educational potential of media in the classroom. Will Richardson was formerly a teacher at a high school in Flemington, New Jersey. Richardson is the author of the blog Weblogged and the book, *Blogs, Wikis, Podcasts, and other Powerful Web Tools for Classrooms*. It was his use of blogs in the classroom that won him notoriety in the classroom. And according to the information posted on Weblogged, Richardson is also “The sole operator of Connective Learning, LLC (est. January 1, 2006) through which I contract paid appearances to speak, conduct workshops, or consult with individuals, schools and districts” (<http://weblogg-ed.com/about>).

Will Richardson, speaks about the potential of the “Read/Write Web” as a collaborative space for students to access information and ideas from different sources, connected only through hypertext. Students can also use this space to contribute their knowledge to people in places outside their daily scope. He also places an emphasis on the fact that the classroom is no longer restricted to four physical walls. Richardson’s style is engaging and direct with specific anecdotes of technology’s amazing potential when used effectively for learning. He speaks from personal experience of students collaborating with students from other countries on a blog, students creating their own Web pages to discuss and present course content, and creating oral histories and interviews through podcasting. His view of technology’s potential is related to students’ engagement in critical thinking, but critical thinking in the sense of responding in thorough and thoughtful ways, the processes of analysis and evaluation, and inquiry as well as an exploration of questions posed

and solutions possible. But Richardson's reference to critical thinking does not relate to any analysis that questions and challenges dominant sources or works to heighten critical consciousness so students are better able to question the beliefs and the nature of their historical, educational and social situations. Although, Richardson's work is a step in the right direction from the banking method of education, it still falls short of empowering possibilities. The students that he depicts as engaged are not seeking out or sharing subjugated, multicultural, and indigenous knowledges; they are merely informed and working within a Eurocentric educational framework. They are not collaborating, problem posing, or thinking critically as active agents of their own learning. They are merely using a learning tool they are comfortable with.

What I find most disconcerting is that the schools Richardson refers to are almost always in middle and upper class areas or in urban schools with administrators that value technology as an instructional tool and thus support its integration at all levels. Never in his message does he acknowledge divisions or the complex web of power-laden forces that affect the use of technology at the classroom level in urban settings. He does make reference to that fact that schooling hasn't changed significantly in the past century; classrooms are teacher centered and the textbook is the only source of information, with paper, and pencils as the only means for communicating. He comments on the continued resistance to change, but never ventures to address reasons for this scenario within a political, social, economic, or cultural lens. Critical teacher researchers need to use the emerging technologies Richardson presents to us and determine empowering ways in which to move toward a critical consciousness. By doing so, we are better able to address issues inherent in the overarching digital divide, and begin to work toward solutions. Yes, both students and teachers can find a voice when using technology in effective ways, but it is what we intend to do with our new found voice that is important.

Richardson's counterpart, Alan November has a strong, upbeat, humorous style that speaks directly to the classroom teacher. He offers strategies for students to validate information on websites, has written a guidebook that helps students and teachers effectively find, sort, and evaluate information, speaks of 21st century empowered learners, and authored a book *Empowering Students with Technology*, inviting teachers, administrators, parents and students to embrace technology as a learning tool. Much of what November offers can be viewed as effective strategies and used at the classroom level but it tends to be presented as a "one size fits all" model. However, he does touch on graver issues such as the need to shift control from the school system to the learner, identifying schools as "Reality-Free" zones that inadequately reflect the technology and media adolescents use in their personal lives and fail to use technology to create a new teaching and learning culture, because the teachers work within a lock-step hierarchical management system, and because the textbook publishers and testing companies dominate and control most of what is taught in American schools. But what is disheartening about November's message is that he refers to these situations with mere sound bites. He gives us snippets of "this is how it is" but never proposes ways in which we may facilitate change. The

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avoidance of new discourses, solution posing and participatory action perpetuates the status quo. Teachers' acceptance of these "facts" is likened to students passively accepting official words and grand narratives. Educators such as November who fail to act on unjust realities, remind me of the students Shor (1992) speaks of in *Empowering Education*, "...year by year their (children's) dynamic learning erodes in passive classrooms not organized around their cultural background, conditions or interests" (p. 17). The business of schooling has had the same detrimental effect on teachers. Additionally, November refers to students using technology and media with a class bias. The pieces of hardware that he deems common place for school age children would most likely be found in middle to upper class homes; iPods, Xbox Live, and a computer with high speed Internet access in order to make video calls with Skype™. I have yet to see these technologies used in the daily lives of the urban students I work with. And merely "giving" students technology does not equate with empowerment. By re-constructing their work in instructional technology through a critical lens, teachers are able to facilitate the empowerment of students as well as other teachers.

For me, empowerment is having the knowledge that the status quo must be changed as well as the teaching and learning tools needed to do so. And, by means of praxis, within a coexisting role as teacher and researcher, we can begin the change. However, without critical reflection, teachers become one of many who inadvertently accept and perpetuate the status quo. I have found that both students and teachers are conditioned to leave their personal lives at the door of learning. We are indoctrinated to make the classroom a neutral ground, a place in which to receive information. But I have also found that there are teachers doing compelling, meaningful work with support of effective technology use. However, without critical reflection they do not always realize the powerful implications of cultivating their students' intellects. They do not realize that this cultivating of intellect empowers them and their students, to move toward changing unjust social practices they have come to accept.

With the tenets of critical pedagogy as a foundation for my own research, I continually identify classroom practice that reflects empowering acts; teachers risking disciplinary action in bypassing their school's Internet filtering system so that their students can read and view information labeled "inappropriate" by dominating forces; students creating videos to teach one another concepts usually reviewed by taking practice standardized exams; teachers using blogs to give their students a medium in which to share, question and construct knowledge; students creating digital nonlinguistic representations to understand complex concepts; students and teachers video conferencing with people from places throughout the world. I do not wish to label these or any other pedagogical occurrences in positivist light, but rather explore alternative meanings and discourses of teaching and learning. When reflecting on my personal experiences, or reviewing research on instructional technology, or analyzing pedagogical practices, I aim to go beneath surface meaning (Shor 1992), theorize my own experiences rather than articulate the meaning of

other peoples' theories (Giroux 1997), embrace the performative aspect of teaching (hooks 1994), and learn how to negotiate across boundaries of age, ethnicity, and social class (Tobin 2005).

Like critical theory, critical pedagogy is continually evolving and creating new critical discourses that reflect classroom experiences. It is of profound importance that as teachers we are familiar with the multiple intersections of knowledge production so that our research and reflective processes can ultimately lead to action that will entail the cultivation of ways that will bring others together in order to work toward common emancipatory goals. Although, the messages of both Richardson and November are often times inspiring, exciting and motivating, they lack the reality that urban teachers face when they return to their buildings; ignoring the traditional notion of the digital divide, deep in economic disparities, or the digital divisions of capital (economic, cultural, social and symbolic), gender, age, and cultural bias, technology using students vs. their teachers, or the complexity and complicity of constructs of power. However, with their ideas helping to inform our work, critical teachers can strive to develop new theoretical insights, connecting notions of power and oppression, joined also with an awareness of cultural and societal structures as they shape the use of technology at the classroom level.

CONCLUSION

Technology use is not an isolated act. With a knowledge that technology use cannot be understood without reference to the people using it, the context in which technology is used, and the purposes for which it is used, my research is grounded in narrative inquiry, relating the story of a multidimensional act within cultural, historical, and social contexts. Converging with an auto-ethnographic approach, I understand my limitations as I employ a critical self-reflective methodology, working to re-know "what I thought I knew" (Shor and Freire 1987, p. 9). As critical teacher researchers it is important that we share our stories with one another, in a hope to "transcend the inadequacies of thin descriptions of decontextualized facts...and gain the ability to produce thick descriptions of social texts..." (Kincheloe 2003, p. 246). Narrative inquiry is more than story recording. It is a form of research that can serve as a powerful tool in the sharing and constructing of knowledge. It is bound to cognitive issues of memory; those that are constructed and perceived. It is a unique way of getting at "worlds within worlds." As teacher researchers we are located within a time and place, culturally and socially bound. But yet we are also located within an interwoven range of stories. Narrative inquiry, from this point of view, is one of trying to make sense of life as lived. To begin with, it is trying to figure out the taken-for-grantedness of social life (Clandinin and Connelly 2000). In the spirit of the bricolage, narrative inquiry interacts with and synergizes the other methodological and theoretical tools in use. One of the more misguided perceptions or grand narratives of technology use is that technology is inherently "good" for students, "good" for society, and "good" for progress. Teachers are usually quite excited that they are incorporating technology

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in their classroom practice but do not realize that often the way in which they do so is reminiscent of Freire's banking concept of education. Teachers use PowerPoint to lecture, utilize the Internet to access online Regents practice exams, and employ an enormous amount of instructional time for students to type papers or read a Web site that mirrors information in their textbook.

I have found that one of the best ways to help a teacher envision more effective uses of technology is to communicate a story of such use. By relating accounts of other teachers using the same technologies for problem posing instead of "depositing information," the possibilities of empowering students to critically perceive their world(s) can be visualized. Thus, the narrative expands; the original narrative, intersecting with another, creates a new story. It is vital that we work with present narratives, in order to create new ones that reflect technology rich educational practices that empower students as well as teachers. By doing so we produce new knowledges that uncover multiple emancipatory insights. "Because living in truth represents a fundamental threat to a system of lies, it is not surprising that academic discourse goes to great lengths to develop a discourse based on euphemism" (Macedo 1994, p. 39). As critical teacher researchers it is imperative that stories be told. By creating multiple dialogues and critical narratives of diverse truths, we can support the creation of modes of resistance to dominant powers. In the light of criticality, I envision modes of resistance to reflect new ways of thinking and new forms of consciousness. Research, whether qualitative or quantitative, cannot explain a lived experience, a phenomenon, or a pedagogical practice. In a reductionist view one might claim to produce an objective reality but through research bricolage, complexity is embraced, interrelationships are exposed.

The process of learning with technology, the process of teaching with technology, and the process of researching the two locales, is multifaceted and forever changing. This chapter serves as a starting point to examine the world of technology use in urban educational settings, acknowledge inconsistencies in truths, and create new knowledges that challenge the status quo. It can also serve as the starting point for teachers to be researchers, critically reflective in their practice, telling their stories in layered and interwoven fashion; doing otherwise would be analogous to separating technology from the very people that use it.

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6. PERFORMATORY SOCIAL THERAPEUTIC APPROACHES TO INTERNET-BASED COLLABORATION IN SCHOOLS

Abstract This auto-ethnography describes the development of exemplary teaching practices primarily in the context of an urban middle school technology class with a student population that was culturally and socioeconomically diverse. The development of everyday teaching practices, is documented through vignettes and narratives, and reflected upon with peers and mentors. I used performance-based social therapeutic methodologies and digital technologies as tools in the creation of learning environments that supported the learning and development of students. This approach has the potential to promote greater transparency, accountability, engagement, responsiveness and receptivity to students in the teaching practice.

Central to the theoretical framework being presented here is the idea that participation of students and teachers can be viewed as a performance that must be responded to in a new way. A performatory social therapeutic approach to teaching practice focuses on organizing the learning environment as a place where new performances are possible for all students and teachers. New performances create the capacity of the group (teacher and students) to transform the learning environment and allow new possibilities for learning and human development to emerge. New possibilities include, risk taking, collaboration, creativity, inclusiveness of difference, collective responsibility and leadership.

WHAT'S POSSIBLE?

My approach to pedagogy is based on my understanding of the performatory social therapeutic framework developed by Fred Newman and Lois Holzman (Holzman and Mendez 2003). Newman, a philosopher and therapist and Holzman, a developmental psychologist and a leading Vygotsky scholar, have developed an approach to human learning and development that is based on the works of Karl Marx, Ludwig Wittgenstein and Lev Vygotsky, which they call social therapy. Social therapy is a form of group therapy that helps with emotional pain by focusing on the activity of creating the group. Over the course of 40 years of practice, Newman, Holzman and others have discovered that the methodology of social therapy and its emphasis on groups, emotionality and performance creates the conditions necessary for good learning environments. Their work in the field of youth development in

after-school programs such as the *All Stars Project* in New York City and their success (Gordon, Bowman and Mejia 2003) with New York City public high school students is what led to my interest in human learning and development. It was that interest that ultimately led me to a career in education.

- Lev Vygotsky, a Soviet psychologist, who is “a common source of inspiration (and citation) for social constructionists and other postmodernists...” (Holzman 2006, p. 6) is central to Holzman’s work in teacher professional development and education. I have summarized the following from a training presentation (Holzman 2011) on Vygotsky in the area of learning and development in which Holzman contrasts the social therapeutic understanding of Vygotsky (Newman and Holzman 1997) with mainstream understandings.
- Vygotsky viewed Play as developmental activity associated with performance, and “creative imitation” (Vygotsky 1978). In play there is an opportunity to, as Vygotsky says, “be a head taller” as development happens. In the context of groups or community, learning and development form a dialectical unity; one cannot be considered in isolation of the other. The zone of proximal development (ZPD), a key concept of Vygotsky is an activity, not a space. Learning activity simultaneously creates the ZPD and is the result of creating the ZPD with others who may have different levels of ability or knowledge but are accepted as co-creators in the activity regardless of proficiency. Human beings are born into culture and *they are the creators of culture*. Finally, learning and development, play, performance, creating culture and the “search for method” are all “tool and result” types of activities (Vygotsky 1978). “Tool and result” activities are those that are considered to be dialectical unities or totalities. The results of these activities are not separate from the activities themselves. These tools are custom designed for the

My first year at Manhattan Middle School had been wonderful. The kids were engaged, the teachers were great, everyone worked hard but it was self-generated pressure and we really enjoyed coming to work. That slowly started to change with the movement toward data driven instruction. The ARIS system and the new school’s report card turned us into a “C” school. It was very hard for us to show progress when all of our general education students performed at level 3 and 4 and it was very easy to score lower. From then on the work became more stressful. The administrators and several teachers had a hard time emotionally processing the “C” they weren’t used to “failure.” I became an outsider to the whole process, I didn’t believe in the grade and I didn’t believe in pushing students who were doing well to get marginally better at something they *already knew how to do, getting good grades on a test*. How about making time for all the interesting things to learn that were not on the test?

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- situations that they are being used in. In contrast, a hammer (a tool for result) is a tool designed to produce a particular result (driving the nail) regardless of the situation.
- Within this framework the activities that students and teachers are engaged in are viewed as scripted performances and improvisational performances (Lobman and Lundquist 2007). A student is viewed as a performer and a typical performance might include using a computer or playing an improvisation game. The teacher is also a performer who may create a performance of directing the activity of a group of students. The possibility of new performances and relationships for teachers and students emerge as the improvisational aspects of performance are embraced and new responses to typical situations are attempted.

THE SETTING

The teaching practice described in this chapter takes place in New York City during the 2007–2008 school year. At the time New York City public schools had been under mayoral control for nearly 6 years and *No Child Left Behind Act* of 2001 (NCLB) had been influencing significant state level education policies for 7 years. The discourse in the public schools among teachers and administrators included terms such as “accountability,” “data driven instruction,” “life long learning,” “critical thinking,” and “twenty first century skills.”

The local economy was moving into a recession and many public schools suffered from overcrowding. According to a New York City Department of Education press release (2007), student achievement while improving, stubbornly maintained patterns of gaps in achievement along race and class lines. There were also performance drops as students moved from elementary to middle school. During the same time frame high school graduation rates hovered at around 52 percent according to another press release (2008). Under the administration of Mayor Michael Bloomberg schools were issued annual report cards that held them accountable for adequate yearly progress (AYP). Schools that did not demonstrate AYP in student achievement would be given low grades and successive low grades would result in closing or reorganization of the school. Administrators and teachers were required to use students’ performance data available from the Achievement Reporting and Innovation System (ARIS) to “drive” instruction in areas of students’ learning that were “in need of improvement” as indicated by analysis of system reports.

Manhattan Middle School (all proper names are pseudonyms unless already identified by the author of this chapter or cited works) was a small school that increased in size over the course of 5 years from 193 students to 385 (in the 2007–08 school year) and occupied the top two floors of an elementary school building. The student population was economically (23% on average were eligible for school lunch), and ethnically diverse with the composition of students on average being White (44%), Asian (30%), Latino (13%) and African American (12%) with less than one percent including all others (Demographic data compiled from NYC Department of Education School Report Cards 2005 – 2008).

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My daily routine as a technology teacher included working with 4 sections of 6th graders where each section was about 35 students and a section of 6/7 grade special education students. The school did not have a dedicated computer lab so I was required to move laptop carts to rooms that were unoccupied so that I could teach my technology class. I was charged with designing a curriculum that satisfied National Educational Technology Standards (NETS) and working with other 6th grade teachers on cross-curricular projects. We had 4 laptop carts (120 laptops), two on each floor that contained either Dell/Windows laptops or Apple iBook laptops. The school had wireless Internet access and SMART Boards in 6 classrooms. As the technology coordinator I provided support to 6th, 7th, and 8th grade teachers who were attempting to integrate technology into their teaching. I also coordinated various technical issues such as the management of student e-mail accounts, new equipment orders and Help Desk calls. In addition to my teaching responsibilities I maintained and repaired equipment as needed.

TEACHER RESEARCHER AS A PERFORMER, AND REFLECTIVE PRACTITIONER

Early in 2002 I was accepted as a New York City Teaching Fellow and became a teacher in the South Bronx. Teaching had become my second career after nearly two decades of work for Fortune 500 companies and Wall Street firms as a technology professional and entrepreneur. I had been drawn to education via my participation in a non-profit youth development organization, the *All Stars Project in New York City*, where I had been a financial contributor, volunteer, and a Board member.

As the son of Puerto Rican migrants living on the Upper West Side of Manhattan from the mid 1960s to the late 1980s I participated, with great success, in outside of school learning environments that were led by Puerto Rican and Black community activists and leaders. I define my success in those environments as being able to participate in community activities and practices that were meaningful. My achievements included teaching Sunday school, tutoring younger children in after-school programs, and participating in organized activities such as Martial Arts practice.

During my first teaching job in the South Bronx the teachers there told me that many of my students could be classified as “Special Ed”, but were not because the Department of Education wanted to reduce the number of students within that classification. Several of the new Teaching Fellows at my school were being trained to be Special Ed teachers. Many of them confided that they had merely checked the box on the application that indicated that they were interested in “Special Ed” thinking that there would be an information session and time to make an informed choice. That turned out not to be the case, anyone who checked the box was designated as “Special Ed” teacher.

My experience with the *All Stars Project* reminded me of earlier successful learning experiences and had a life changing impact on me. I could see that young people who had backgrounds that were similar to my own were benefiting from taking on the practice of seeing themselves as performers and creators of the scenes that they lived in. One of my mentors, Lois Holzman was one of the builders of the *All Stars Project* and was the director of the *East Side Institute for Group and Short Term Psychotherapy* (the Institute). The Institute offers improvisational performance workshops and educational programs for educators. When I recognized that I was struggling as a new teacher, I turned to the Institute for improvisation training and supervision to support my development. My training at the Institute led to my enrollment in a doctoral program and the creation of my performance as teacher – researcher.

BUILDING COLLABORATIVE LEARNING ENVIRONMENTS PART I

One of my teaching assignments at Manhattan Middle School was to teach the computer technology class to a 12:1 (12 students to 1 teacher) special education class. These students all had *Individualized Education Programs* (IEP) that detailed their learning disabilities and modifications that were to be carried out in the classroom. I was not certified for special education instruction and there were no assistive technology requirements that needed my attention. In addition, I was not privy to the contents of the IEPs. The curriculum enacted was roughly parallel to that of the 6th graders in the general education setting that I was teaching at the same time. I discovered that the teaching practices I employed with general education 6th graders needed to be adapted in response to the challenges presented by the special education students. The changes I eventually made had an impact on the totality of my teaching practices, and altered my attitudes about independent learning, responsibility, and leadership in the special education classroom. The problems I faced in the special education classroom involved being able to work with the students as a large group and as individuals. The students had varying degrees of ability with computers, and their frustrations were apparent; everyone wanted my help or attention at the same time. I realized the class needed new performance activities, and collectively we needed to create a new scene. The new performance activities included explicitly working on building expectations for the group and distributing responsibilities in the learning environment by providing opportunities for student leadership. The youth development programs of the All Stars Project emphasized supporting young people to be leaders, this seemed to be a key feature in the methodological approach.

Improv as intervention

I received training in theatrical improvisation and Vygotskian methodological approaches from Carrie Lobman. Lobman is an associate professor at the Graduate School of Education at Rutgers University, and an expert in the use of play and improvisation in the classroom. She is also the director of pedagogy at the East Side

Institute. After training with Lobman for several years I was very confident in my ability to use improvisational games in the classroom. I had been in learning environments where the improv worked to the benefit of young people in outside-of-school programs and I was eager to use the methodology in the situation I was facing. After several weeks of trial and error, I settled on using 15 to 30 minutes of class time twice a week for playing theatrical improv games (Lobman and Lundquist 2007) and working on creating a learning environment where students took turns leading group activities.

The fundamental ideas in improv are “yes, and,” and building on what came before, accepting offers and making the ensemble look good. “Yes, and” indicates acceptance of an offer, the performer is open to opportunities to add to what came before, or transform it in some creative way. This is what builds an improvisational scene and the theatrical direction of “making the ensemble look good” creates cohesion and shared purpose in the scene. The improv games focused on developing listening and observation skills as well as collaborating and playing according to rules. As we learned to play new games I noticed that the games that incorporated rhythmic sound and motion were more popular with the students than games that focused on collective story telling which I had used in other settings.

A NEW TRANSITION – PERFORMANCE OF A CLASS MEETING

As I introduced the improvisation games I also introduced a formal structure that I called the class meeting. When students entered the classroom they would take their seats and a leader for the meeting would be selected. The leader would be responsible for running the meeting. Leading the meeting included checking-in with classmates and asking them questions about the status of assignments and their work plans for the class. The leader would also choose a game for the class to play and select students to go to the laptop cart to retrieve laptops and begin the project work portion of the hour. I usually prepared an agenda for the meeting so the leader would have a “script” to follow. As the routine set-in the students started to anticipate being selected as leaders and would often enter the room asking who would be the leader for the day. The leaders

This work is never as easy as it reads. There were so many times when nothing worked or when it was working and a student would throw a fit for whatever reason and throw us into the more familiar patterns of teacher reprimanding students and threatening consequences. I would often walk out of the classroom after a difficult class and just complain to anyone who would listen about how hard it was to be patient and not be mean right back at them. Then there were days when it was like magic and it was amazing what we could do together. After talking my frustration out with someone I would regroup and figure how to help the group to be a group the next time.

became adept at establishing routines for the rest of the group members. In the case that some situations (such as a highly agitated peer) were beyond what the student leaders could handle, I would step-in as needed.

The responsibilities of leadership were challenging for some students. Bullying, teasing, and disrespect were not acceptable as part of the leadership performance. If a student could not perform as a leader someone else would be asked to take on the responsibility. Every class session became an opportunity to try to be a better leader. The students who struggled were highly motivated, and they wanted to be leaders. There were a couple of students who were uncomfortable or uninterested in the role and they were allowed to pass on the opportunity when they were selected. The class meeting was not the only place where students could demonstrate leadership.

Student leaders emerged in different ways as class routines became familiar and the level of responsibility, confidence, trust, independence, collaboration and cooperation in the classroom increased. Two activities stood out in my mind as surprising in the level of engagement and cooperation that was achieved. The first activity involved cooperating to solve a word search puzzle.

The students would work together to share words they found in an effort to finish everyone's sheet. Each student would start by finding his or her own words. As the words started getting harder to find, students would start communicating with each other about what words on the list they were looking for and what words they had found. I frequently reminded students that the goal was for the entire group to finish. It was not a competition between students. They were collectively working against their previous best time. Finishing the group activity was required in order to move on to independent project work. The fastest students began to help the slower students. What was surprising was that the fastest students were not the ones I would have expected. I recall that Sandra, a very soft-spoken student who never took the opportunity to run the class meeting, excelled at this activity and would lead by helping her peers. While individual student frustration did exist, Sandra and other students were available to provide help. I considered accepting help from peers to be a significant development with this group of students. Sandra was a student who was assigned a paraprofessional to help her in the classroom with schoolwork. Her new performance demonstrated that she could help others and was very good at solving puzzles.

The second activity was a game called "pass the beat." The students would sit around some desks pushed together in a large rectangle. A student's right wrist would overlap with the left wrist of the student to the right, while a similar overlapping occurred with the student to the left. The students, sitting with wrists in contact and palms down on the desktops, would negotiate who would start to pass the beat. The beat, made by tapping the desk with the student's left hand, passed to the left hand of the student to the right, the beat then passed to the right hand of the first student and then to the right hand of the second student. Each hand tapped the table as the beat passed around the entire circle and would continue

until someone missed the beat by either tapping the wrong hand or tapping out of time. The hand that missed the beat would be removed from the circle and game play continued. A second miss by the same student would result in both hands being out of the circle the student being called “out.” As students were eliminated from the circle the beat moved around more quickly and a cadence developed. Students who were “out” continued to observe the game and made note of the emerging “music” by making comments like “it sounds like music” or by moving rhythmically to the cadence. In this game, the students surprised me again. Being “out” did not result in immediate disinterest in the game or loud arguments. Whatever my assumptions were about their abilities, basing them in deficit perspectives would prevent us from discovering what was possible, and who they were in the process of becoming.

BECOMING LEADERS

My favorite student leader, Nina, was poor at playing “pass the beat.” She was frequently out in the early rounds, but she enjoyed watching the game and was the most demonstrative in her response to “the beat” as was evident by her swaying, the movement of her arms and the obvious expression of enjoyment on her face. Jacob, who generally struggled with his behavior in school and had difficult relationships with his peers, was very good at “pass the beat.” He was frequently the leader of that game and could be seen deferring to Nina when he needed help on judgment calls regarding the rules. His deference could be seen in his glances toward her as he provided his reasoning on judgment calls and his willingness to go along with her judgment. In one instance, when Jacob was overwhelmed by arguing with another student and was clearly moving toward escalating physical contact, Nina could be seen intervening by gently wrapping her arms around Jacob and pulling him back into his seat. It seemed to me that playing the game was more important to these two students than getting bogged down in conflicts. Jacob, who was a surprise in this instance, didn’t, in my experience, easily accept help from others and his responses to physical interventions usually involved much more resistance than was demonstrated on that occasion.

I can easily imagine someone asking if I wasn’t sacrificing too much “time on task” doing all the group work and improv games. My experience has been that special education students are routinely seated apart to minimize interactions. I would respectfully point out that not being able to work in a group and learning to interact, reduces the quality of “time on task” in collaborative environments and ultimately contributes to the overall under-development of students by limiting the possibilities for rich, positive, social interactions.

MOVEMENT TOWARD NEW LEADERSHIP AND NEW POSSIBILITIES

These events represented new possibilities within the learning environment. It was possible for these students to create new performances in the learning environment. Nina could be both a leader and an observer. It was possible for students to offer and accept help while performing as leaders. Sandra's expertise with puzzles provided her with an opportunity for a new performance of leadership and that performance was also a helping one. Deferring to another student did not compromise Jacob's leadership in the game. It was possible for students to be responsible for organizing an activity and sustaining it. Nina and Jacob collaborated on producing an environment that allowed them to play a game they enjoyed. The games, puzzles and improv activities created opportunities for these possibilities to emerge and for my relationship to the students to change as I watched and supported them to play. The individual students in the group became more capable of independent work, and more resourceful and patient in the learning environment. Over time the students stopped asking me for help with many basic tasks such as logging into computers. Students took responsibility for reducing the level of conflict during group activities and fashioned performances of leadership that worked to reduce bullying remarks and negative attitudes. Nina's gentle restraint of Jacob, and comments such as "you can't say that if you are the leader" were evidence that students could respond to conflict and bullying in positive ways. Students became more accountable as leadership was valued as an opportunity that was afforded in conjunction with responsible actions as part of the performance. Students demonstrated their interest in leadership when they walked into the classroom asking "Who's the leader today?" They also provided more evidence that they had internalized the routines toward the later half of the school year. On one occasion I was late to class and another teacher filled-in for me, the students ran the class meeting and started to play games. When I walked in they acknowledged me, finished the game, and then started distributing laptops and project work folders.

Student leadership became more dynamic and distributed as different leaders made demands on me to be fair in selecting the leader for the day. On one occasion a student challenged my process for selecting the leader and noted my biased selection process. He was correct, and other students jumped into the conversation providing additional support for his viewpoint. Ultimately, the students created a random process for selecting leaders that they deemed fair. Students also decided for themselves that there could be more than one leader during our meeting time and that different students could lead certain activities.

The development of our ensemble was by no means linear and there were many setbacks as students struggled individually to contribute in positive ways to the group and maintain composure when in a leadership role. As the group developed its capacity to work as a group, an environment of a ZPD was created that allowed me to support students to work on projects using the same technologies that the general education students were using.

AN EMOTIONAL LEARNING ENVIRONMENT

Students would often come into the classroom upset from some conflict that had occurred earlier. The class meetings and the routine of playing games at the beginning of the class helped the students transition into the room by providing opportunities to be in charge (in control of what was happening instead of “out of control”), and to do something that produced good feelings and laughter. According to Holzman, emotions are generally not acknowledged within educational institutions, even though many individual teachers attend to the emotional well being of students every day, institutionally, emotions are related to as problems (Holzman 2009). I started to acknowledge that emotions were legitimate part of the environment by ending the practice of pulling students aside when negative emotions arose. Instead, I helped the group create a zone of emotional development (ZED). In a ZED the group becomes significant in helping the individual with an emotional situation (Holzman 2009). I would often start to create help for the situation by saying something like “Johnny is upset and I don’t know how to help.”

Students had different responses to my saying, some students would begin to volunteer explanations for why Johnny was upset, while others would try to comfort Johnny directly by offering comments that were empathetic like “you just have to ignore that stuff, it happens to all of us” or “they’re just trying to get to you,” the ensuing conversation created the help. Johnny or Jane would usually start talking in response to the attention from peers, and I could wait for an appropriate opportunity to direct the activity of the group while help was being provided. Getting at the “root cause” of the “problem” was not the help that was provided, engaging the student in conversation “helped” with socializing the emotional hurt and recovering enough to get re-engaged with the group in academic activities.

While disruptions, absences, and incomplete work remained part of the learning environment, students developed socially and emotionally. They communicated their feelings and became more receptive to help from adults and peers as they acquired experience with technology. Through their collaborative efforts, helping and leadership, the students were able to positively influence my teaching practices and participate in transforming the power structure and the culture of learning in our classroom.

INTEGRATED TECHNOLOGY

My special education students used the same Internet-based technologies as the general education students in the 6th grade. They started to make contact with peers that they rarely interacted with because of their special education schedule. This was possible through two technology platforms. All students at the school had access to a school sponsored e-mail account and all of my students used the Moodle open source course management system. The Moodle system provided the technology solutions I was looking for, and there was no cost for using the software. I believed

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that in order to improve the quality of student work and my teaching, I needed more opportunities to provide direction and feedback to students before they handed in their assignments for grading. The Moodle system which I set up to be available to us 24 hours a day, 7 days a week provided a means to store and access student work and to interact during class and outside of the normal school day.

Students in *all* of my classes spent a great deal of class time creating multi-media artifacts such as Microsoft PowerPoint presentations, graphic cartoon animations, multi-media websites, Blogs, Wiki documents, podcasts and movies. They were also challenged to take responsibility for their digital creations and their online communications by responding to questions such as “Who is the audience?” and “How do we know what you created is good?” Students interacted in the online environment in many different ways including making contact with friends and being provocative with adversaries. They also put effort into increasing personal status through the accumulation of social contacts (such as, attracting many participants to a discussion forum), or increasing status by displays of academic superiority and increasing status through humor or coolness. This was exemplified by the emergence of online advice forums that were moderated by the students using the Moodle system. Advice for Girls, Advice for Middle School Students, Advice for Boys from Girls are some examples of how several girls and a few boys organized themselves to provide advice to other students on topics that were of interest to their peers. Students routinely blurred distinctions between class sections by asking to collaborate on projects with friends in another classroom. It was something I supported depending on whether I thought the project was feasible under those conditions.

LEARNING ABOUT THE NARRATIVE

My reading of Mikhail Bakhtin, a literary theorist and a contemporary of Vygotsky, provided some helpful ways of understanding the many interactions that I was immersed in while working with my students. Bakhtin’s concept of heteroglossia emphasizes the importance of the context of an utterance whether it is spoken, recorded or written (Bakhtin 1981). This concept includes recognizing many conditions including, social, historical and environmental, when considering meaning. I started to see the online and in person interactions as being part of a narrative that was continuously developing and being improvised. It became clear to me that new meanings were being created. My special education students read posts and contributed to many of the online forums that had been created by the general education students. I thought this was a wonderful development and I came to the conclusion that allowing open-ended access to Internet-based technologies had created new requirements in my teaching practices.

I realized that I had to be more accepting and creative, in order to keep up with the unfolding narrative and, to borrow from Bakhtin, the “multi-voicedness” of our ensemble. I could no longer merely facilitate the learning environment; I

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had to become a director of a learning environment that contained many voices, fluctuating meanings, and many opportunities for learning and development. The level of activity in the many student forums we had created was more than I could monitor or regulate on my own. As I gave students opportunities for running their own discussion forums, Blogs, Wikis, podcasts and multimedia websites they were required to provide me with a “heads up” when content became inappropriate or mean spirited.

I created a formal proposal process for all my students to pitch their project and activity ideas and to structure them. The students had to describe a project or a topic of study and they had to persuade me of the merits i.e., what they would learn, and what the class could learn. There was no guarantee that a proposal would be accepted. For proposals that needed more development, feedback was provided via comments on a Wiki page. Students had the option of resubmitting a proposal with my suggestions or attempting an entirely new proposal. That process helped to establish an environment where students felt confident they could persuade me to their point of view when we disagreed. It also allowed me to be very demanding of the quality of work that was submitted. These two practices allowed me to proceed without constantly feeling that the situation might spin out of control.

BUILDING COLLABORATIVE LEARNING ENVIRONMENTS PART II

My responsibilities as a technology coordinator at my school included providing support to colleagues interested in doing technology projects in their classrooms. This support was provided during my preparation periods (preps) for lesson planning and working with colleagues. I undertook a project with a colleague in the math department to introduce the use of video technology in math learning with approximately 150 of his 7th grade math students at Manhattan Middle School. The students were offered the opportunity to produce math related video productions for extra credit. The workshops took place over the course of five weeks on Fridays during math class. Brian, the math teacher, organized the class into half-hour long sessions where he would work with half his students while the other half participated in the workshops with me. The two groups would then switch after a half hour. The first workshops were intended to help generate ideas for creating videos. During this time the students participated in performance workshops where improv games were played. The goal was to get them thinking differently about math. They were encouraged to include the emotional aspects of their relationships to math in the videos.

The improvised scenes we created during the workshops were “not real” but they were authentic. In one very telling scene a student performed a monologue of waiting at the bus stop while on her way to school. In her one minute long monologue she talked about dreading going into her first period math class and pondered how she would “cheat to get through the morning.” In a different improv activity students were directed to have an improvised discussion on explaining math concepts to each other. It was startling to see that most students struggled with basic vocabulary and

could not explain the concepts they claimed to have understood. I was reminded by their performances of how I struggled to speak French when I was learning it in middle school.

Many different types of video were produced. There were videos of one student tutoring another and there were “sesame street” type videos where students demonstrated addition and subtraction while hopping along a number line. There were demonstrations of math-oriented games, several music videos, and math anxiety related mini-movies that were humorous. In one project a group of students produced a music video using a popular tune with words they had written about math anxiety. When Brian saw the finished video he stated that he had presumed that the student who was singing was very shy and this was the reason for her lack of participation in math class. Her video performance caused him to reevaluate his attitude toward her. In another instance, when two students returned to the classroom from a performance workshop they excitedly engaged him in a conversation about their math anxiety performance. He later reported that he had been looking for a way to engage these particular students and their willingness to talk to him created that opportunity.

There was a high degree of technology skill required in producing the videos and the students provided much of it. I provided some support during the workshops and after school. Brian was not required to provide technology support but his teaching practice was impacted upon by the content that the students produced. During the course of the workshops and the video productions students took opportunities to make public what I considered private struggles with math learning by creating songs and movies about the struggles. I believe that the activity transformed how they felt about math learning as was evident in the willingness of some students to share frustrations or struggles with their teacher. Of equal importance was the enthusiasm that students had for the project and how that transformed how they collectively felt about math class on Fridays. When we debriefed the project at the end of the five weeks Brian reported that the students had started to look forward to math class on Fridays. He also stated that he was thinking about how to get more curriculum integrated into the video project process. The videos provided him with an archive of student misconceptions as well as reusable resources with correct content. He also felt motivated to try the project again in the future, to get administrative support to submit videos to online competitions and apply for technology grants to support his efforts. This project was particularly exciting for me because it was the first time I’d had an opportunity to positively impact upon teaching and learning outside my own classroom. A performatory social therapeutic approach “held up” and produced “results” that were valued by another teacher with a different set of perspectives on learning.

I e-mailed Brian a year after I left Manhattan Middle School. I was checking to see if he had decided to do another video project. He was working with the last cohort of students I had taught at that school. He replied and stated the following: “I’ve got about 80 videos this year. I asked every kid to make three. I just applied for a grant as well.”

OUTCOMES: A REFLECTIVE TEACHING PRACTICE

The activities I have described previously were not experienced as isolated projects or experiments that had particular outcomes that I hypothesized. Through a performatory social therapeutic lens, I continuously looked at the totality of what was happening and what the group (myself included) was accomplishing relative to my effort to be a better teacher and create great learning environments with students.

Throughout the course of the school year my students produced several hundred diverse digital artifacts. I gained some valuable insights into how my students were using technology and what they wanted to use it for. Most students were interested in connecting with others, performing, interacting with pop culture on the Internet and producing their own content. I discovered that they were willing to approach traditional learning in new ways when a video camera was turned on and the prospect of performing for audiences became part of the activity. I observed that students gained a great deal of experience and confidence in their uses of technology and their artifacts provided evidence of that. Students also had opportunities to use the Moodle system. It was the type of online course management system that they might encounter in high school.

I've come to understand teaching as a dialectical unity between the individual and the community. The practice of teaching and learning within a performatory social therapeutic framework couldn't be considered in isolation of the community and the physical environment in which it happens. Teaching and learning impacted the community (students, parents, teachers) and the community impacted teaching and learning. This was possible for me because the practice of accepting improvisational offers opened my teaching practice to being influenced by the demands of the learning community as well as the various resources that the members of the community had to offer. Many key features can be noted that were consistent across the various learning environments I described in this chapter.

The learning environments were organized for supporting performances of distributed leadership with an interest toward offering new experiences and possibilities within a technology rich environment to the group. Interactions between students and teacher in the learning environment increased. Most online interactions were generative of positive emotions and promoted cohesion within the group. These interactions were supportive of diverse learners, and provided opportunities to develop technology skills and expertise. Face-to-face experiences and the artifacts stored in the Moodle system lent support to the fact that positive emotions were identifiable by outward signs such as camaraderie in discussion forums, laughter in the classroom, humor and playful images posted on Moodle forums. In my day-to-day interactions with students I saw them take on responsibilities, share, cooperate and show empathy toward others.

My intent was to use technology to support the inclusion of students in the design of meaningful and jointly determined learning activities, and to be open to the development of new social arrangements using a performatory social therapeutic

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methodology. Making public commitments to my students in the form of class discussions, and meetings was important to establishing my credibility with them. Equally important was the development of clear and consistent structures and providing a high degree of accessibility to my students in the form of informal interactions beyond instructional time. A review of the course management system logs and the history of my online interactions with students revealed that they sought each other out online and that most of my interactions included constructive feedback on submitted assignments and specific responses to their concerns about projects and grades.

Performance and improvisation were tools that I used in resolving challenges posed by interruptions, lack of resources, and other situational constraints. From within this framework I viewed the learning environment as continuously changing. My pedagogical approach became responsive; it changed or developed as new challenges emerged. For example, I abandoned authoritarian and inflexible approaches as we (teacher and students) engaged in increasingly complex social arrangements. Trust and development of democratic practices (in contrast to obedience or compliance) emerged as an important requirement of the learning community.

AXIOLOGY

When I first started teaching I was alone in the classroom and struggling as all new teachers do. Change was produced in my teaching practice with the support of different communities in the non-profit sector (East Side Institute) and in academia (doctoral program). These communities have an interest in creating changes in teaching and learning approaches. I feel a deep ethical obligation to continue to actively participate in contributing to these communities.

As I have come to understand it, we have to be *willing to create with others continuously*, that is how we can create new culture. I disagree with much of what happens in education institutions and creating agreement, “yes, and” on what constitutes the best learning environments is critical. New possibilities for teaching and learning are afforded by integrating Internet technologies into schools. Developing the sophistication of our pedagogy in response to these new possibilities seems to me to be the best route forward for partnerships with an agenda for change that must operate within the existing constraints.

I inadvertently achieved a level of transparency I had not anticipated when I introduced the Moodle and Wiki technologies into our learning environment. Parents had opportunities to evaluate me through the artifacts and online environments they watched their children create and participate in. The parents I met in four years of teaching at that school were supportive and enthusiastic about what they saw. They clearly valued the level of technology I made available to students and the level of interaction I had with their children.

Parents are enthusiastic supporters of their children having broad experience with technology as a part of their schooling. They are also very concerned that children

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may be exposed to adult themes, controversy and a continuous advertising stream. Introducing digital technology and video into school projects provides opportunities for skills development and the possibility to produce content that is educationally relevant. I believe that an active and supportive presence in the online and offline multimedia production activities of students is a necessary next step for educators, schools, and parents.

Seeking help from the East Side Institute while implementing change at the level of teaching practice was fundamental to the development of my teaching. In my experience, new technologies and innovative approaches often render best practices obsolete. This creates a tension between change agents interested in innovation and administrators who are charged with maintaining order and smooth operation. The ensuing debate over changing practices is healthy and necessary for moving forward. However, I do not believe teachers, administrators, policy makers or parents will settle the debate as it is currently constructed. I believe we (teachers, parents, students, etc.) can create new possibilities in schools if we can relate to each other as the *co-creators of school culture* and we view teaching as a practice that is responsive to what happens in the world in the interest of changing it.

AREAS FOR FURTHER RESEARCH

The use of a performatory social therapeutic methodology in a technology rich learning environment during the normal school day is a modest advance of the work carried out in many after school programs. Based on my experiences I believe the following projects merit further exploration.

STUDENT PRODUCTION OF EDUCATIONAL CONTENT (SCIENCE AND MATH)

Scholars use publications and, increasingly, digital artifacts to share information, offer peer review and build the practices of a scholarly community. The artifacts created in technology rich learning environments (K-12) could be used in a similar fashion. Inexpensive technologies such as digital video cameras, and open source software (Moodle, MediaWiki) make it possible to support teachers and students to publish multimedia documents, audio streams and video. Using a performatory social therapeutic approach to the process of production of cultural artifacts may open up opportunities for a greater range of emotional expression and relationship formation in the areas of math and science learning. A technology platform that creates an audience for an online learning community may increase the intrinsic value of the production activities to the students.

The experience of the All Stars Project in the production of community-based talent shows indicates that young people will invest time and effort to produce a show. It has been my experience that teachers will attempt new approaches to project work, if the technology environment is reliable. An intervention in a mathematics or

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science classroom would require modest commitments of class time such as weekly half hour workshops. Workshop directors would work with students to develop emotional and practical dimensions of math and science learning, and provide expertise in the production of videos. Teachers and students could then be supported to reflect on the content of the videos and work toward the development of content that is meaningful and supportive of learning (by sharing) in the school community

INTERCONNECTING NEIGHBORHOODS AND SCHOOLS – BUILDING AUDIENCE

Schools within a geographical distance of just a few city blocks are frequently isolated from each other with the few interactions that they do have being limited to district meetings for principals, professional development meetings for teachers, and school rivalries among the students. A research project that sought to interconnect the neighborhoods and schools with Internet technologies such as discussion forums or multi-media projects is technically possible and financially feasible. Partnerships with institutional stakeholders in the communities such as places of worship, the local news media, community organizations, and non-profit organizations could provide support on several fronts. Bureaucratic transparency, access to resources, and the ability to coordinate within the community are all facilitated by Internet technologies and engaged stakeholders. The project would work to sustain meaningful dialogues between institutions and require training of key stakeholders to recognize mutual interests and organize coordinated community action. A possible community goal might include creating a diverse, inclusive online environment for students to participate in creatively and safely. Established non-profit institutions with community development expertise and commitments to the community could support this type of environment. This would be a step in the direction of transforming the community and transforming its relationships to its schools.

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7. COMIC BOOKS, TECHNOLOGY, AND DIALOGUE: ALTERNATIVE TOOLS FOR MEASURING ACHIEVEMENT IN A SPECIAL EDUCATION COMMUNITY

Abstract In this chapter, I discuss my research on the use of comic books with middle school students labeled with disabilities. I use autobiographical narratives, critical theory and students' lived experiences to highlight and argue that traditional ways of assessing students, based on measures of attendance, standardized curriculum, and standardized test scores - tend to segregate students based on their disability and academic ability. As the special education teacher and teacher researcher, my instructional approach coalesced creative writing, illustration, comic books, and technology within a dialogue framework. I use the activities involving comic books as alternative tools to assess the participants' academic achievement. Participants transformed from marginalized to productive learners, leaders, and co teachers. The findings demonstrate that understanding students' lived experiences within comic books enables me and other teachers to implement alternative approaches to assessment to redesign classrooms to provide more welcoming environment for students.

The New York City Department of Education (NYCDOE) is home to over 1.1 million students. Around 138,000 students are classified with disabilities. Approximately, 23,000 students receive part or all of their education and services in District 75 (D75) (the citywide self-contained division for the severely disabled) in seclusion from the general student population. The Latino(a), and the Black students make up the bulk of this "special" population, as listed by *New York City Department of Education Statistical Summaries Home: 2006–2007 District 75 Citywide School Region breakdown by ethnicity and gender as of 10/31/2007*. These two student groups are profiled according to the United States Census Bureau (2007), as living in poverty and represent a high percentage of the population classified with the most severe disabilities and absenteeism in the self-contained division.

SCIENTIFIC RESEARCH – INTERPRETATION OF TEST SCORES

The Individuals with Disabilities Education Act (IDEA 1997) emphasizes testing and academic achievement through the use of technology as an educational tool. This assertion is justified in terms of scientific research. The enforcement of

academic standards and measurements into policy enforces the “norm” or White upper and middle class academic principles (Kincheloe and Steinberg 1997). While it is the responsibility of the federal government to react to the growing needs of an increasingly more diverse society, historically speaking this country does not embrace racial, educational differences, economic or social changes equitably (Ferguson 2000). According to Ferguson, the school system is created around a dominant cultural hegemony that holds White middle class culture to be the norm and does not acknowledge cultural differences.

Sandra Harding (1998) identified scientific research as the main problem with the American education system. She explained how the products of scientific research have often been used to benefit those in power and oppress or exclude those already on the margin. According to Madison (1988) it is important to understand how data (test scores) are interpreted. He questioned why certain interpretations of data are more readily accepted, while others are dismissed. Proponents of using scientific research in assessment argue that it could be used as a powerful tool that aims at maintaining the world as orderly and rational as possible (Skrtic 1995). This viewpoint serves the purpose of a few who are capable of high achievement and is set firmly in the culture of education (Madison 1988). A perfect and orderly educational system does not have room for or the capacity to care for students with differences. Given that schools are considered to be orderly and disabilities are considered to be pathological, stakeholders are able to design solutions they deem appropriate for these children. This positivist framework creates ways to categorize students with disabilities and highlight special education settings as a “safety valve” (Skrtic 1995) to contain recalcitrant or low-achieving students and prevent contamination of the good student population. The safety valve or sorting system also prepares children for their place in the social hierarchy (Ferguson 2000). In the long run, the results are higher dropout rates. In June 2005, *The Advocates for Children* filed a report that looked at dropout and graduation rates of self-contained students in New York City who receive special education services. The report relied on data provided by the New York City Department of Education, which indicated that the graduation rate for students with disabilities is lower than the rate of almost every other state in the country. The data also demonstrated that Black and Latino students graduate with diplomas at a far lower rate than Asian and White students who received special education services in New York City.

According to the IDEA (1997), which is a law ensuring services to children with disabilities throughout the nation, poor students of color are 2 to 3 times more likely to be identified by their teacher as having emotional disorders or mental retardation than their White counterparts. The overall delivery of special education services seems to be driven by two types of services, the medical model and social system model. Skrtic (1995) argues that special education’s knowledge traditions are “grounded in psychology and biology (medicine), which means that special educators presuppose that school failure is pathological, and school organizations are rational” (p. 68). According to the National Research Council, the medical model positions children with disabilities as having an intrinsic condition that will respond to treatment, such

as, therapy or resource room services (Donovan and Cross 2002). This view of the pathology of disability creates an unequal educational opportunity for those students subjugated to the special education ranks. The social system model conceptualizes students classified with emotional or behavioral disturbances in terms of external social structures (e.g., poverty, class, disability, parental educational status, and race) that interfere with learning (McDonnell, McLaughlin, and Morrison 1997). In this sense, the students' external social environment is the main focus and considered the cause of their disabilities.

As a D75 teacher, I witnessed the negative impact of segregation or self-containment. I contend that school absenteeism compounded with a disability, poverty, lack of educational role models, low parental interest, and unsteady home life are some of the catalysts that negatively impact the educational lives and academic results of urban students (Wilson 1996). Other common characteristics of self-contained students that affect both reading and writing are problems with attention, memory, and organization (Bay and Bryan 1992). According to the 2007–08 schools' report card (New York City Department of Education 2008), my school, PS/MS South Bronx (all names are fictitious unless otherwise noted) had 378 students who performed at levels 1 and 2 on both English Language Arts and Math tests. Researchers who study academic achievement and test scores have found them depressing (Hanushek 1997). To remedy the situation, the United States Department of Education values technology as a means to improve student academic achievements in schools (IDEA 2004).

The *No Child Left Behind Act* (NCLB 2001), sections 1111(b)(2)(B) 1111(b)(2)(C)(v) (2001), and IDEA (2004), section 111(b)(2)(G)) (2004) emphasize student academic achievement as a priority and require annual academic assessment of all students with disabilities. The NCLB and IDEA highlight the following as the vehicle to student success: 1) technology as an academic tool; 2) technically skilled certified teachers; and 3) scientifically-based research methods in teacher training.

This chapter highlights a study that took place in my school in a response to the policy push for technology as an academic tool. The six-week study involved D75 students from different educational settings, called the *Comic Book Research Dialogue Group* (CBRDG). The study focused on the learning and development of literacy skills through the creation of computerized comic books. The findings are in two distinct and intertwining parts: first, dialogue, literacy, and technology coalesce as teaching strategies to help marginalized students; and second, the transformation of D75 students into leaders and coteachers. I used the CBRDG activities as alternative tools to measure academic achievement.

OVERVIEW OF CBRDG

The research was conducted at PS/MS South Bronx, a D75 self-contained elementary and middle special education school (grades kindergarten to eighth). The school is located in the South Bronx, the highest poverty area of the Bronx. In

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2000, the United States Census Bureau reported the median income per family for the Bronx as \$28,173 the lowest among the five boroughs. In CBRDG, I explored the academic, and personal development of three students, Brock and Stewie, who are D75 students attending general education classes (known as Inclusion) and KK who attends a self-contained class. In this way, I am able to understand “learning” within the contexts of their respective educational settings. In this chapter I interpret the CBRDG in the context of students’ lived experiences, and at the same time provide a critique of policy tools in order to refute scientifically based research and educational segregation.

Participants and consent

The CBRDG group consisted of me, as a teacher/ researcher and a volunteer group of D75 sixth grade students (four boys and one girl) – Stewie, Brock, Elliot, Daniel, and KK. There were three Latino boys, one Black boy, and one Latina girl. Due to Brock and Stewie’s regular attendance, I chose to follow their progress. Each student returned a signed consent form that discussed the procedure of study and the gathering of data and collection of comic book artifacts. Additionally, permission to conduct the research was obtained from the building supervisor and District office.

Location and time frame

The CBRDG met in the school’s computer lab, which is split into two sections – one half has 12–14 desks-chairs combinations to facilitate discussions and simple instructions, and the other half had between 12–14 working computers with CD-ROMs and DVDs at one time, two printers, Smartboard, and scanner.

Instructional procedure

A six-week outline was created to dictate the flow of activities. Lesson plans were generated as a guide to the unfolding of weekly dialogue on the individual comic books, technology instructions on the various devices and applications (Microsoft Word, PowerPoint, scanner), and the development of the writing structure. Blank comic strips were designed, and colored pencils, markers and other tools were provided to assist students with the creation of their comic strips.

DATA COLLECTION AND ANALYSIS

To capture the qualitative data for an interpretive descriptive approach, the sessions were video and audio taped to identify the teacher-student dialogue process, creative writing process, peer-to-peer dialogue interactions, technology training, and students’ interfacing with academics and technology. Erickson (1998) affirms that “an effective data collection includes many different sources” to support one’s claims (p. 1158).

Informed by Guba and Lincoln (1989), I blend multiple methods and data sources to increase the reliability and validity of my interpretation as well as to establish trustworthiness of the data. The videotapes were transcribed using Windows Movie Maker editing software. The software enabled me to split larger video data clips into smaller more manageable data clips for coding, identifying individual and group interactions and to capture photographs of the different activities. The students and instructor analyzed the ways that students normally interacted with new classroom topics and re-analyzed similar learning interactions after co-generating ways of integrating technology and literacy into their worlds.

Artifacts

The end product is the computer-generated comic book. Other artifacts include recorded activities in my teacher's journal, collection of the handwritten work (summaries, character descriptions, images, and comic strip draft.) Such data afforded invaluable insights into the creative and writing processes used by students during the project.

Trustworthiness and authenticity criteria

Urban students living in poverty and classified with disabilities probably know that "it is quite possible to want, even to need, to act, but to lack the power to do so in any meaningful way" (Guba and Lincoln 1989, p. 250). This study is concerned with catalytic authenticity, which can be defined as action and change in the social transformation of student agency and group members' identity re/construction. During the research activities with the members of CBRDG, my primary concern was that the data collected and analyzed would potentially improve students' immediate lifeworld conditions. It is through participation in this study that students' agency can increase.

TOOLS FOR ACCESSING AND MEASURING ABILITY

In the CBRDG, the participants came to the group with a variety of technical skills and other strengths that did not readily transfer into the academic setting (Epstein and Rudolph 2001). As the teacher of the group, I had to find a way for the participants to utilize their set of technical skills as a tool to access literacy. Although a multitude of definitions exist related to literacy, my study focused primarily on the fusion of literacy and technology to create computerized comics.

Comic books

The "CB" in CBRDG stands for comic book. Research on the use of comic books as an instructional text in the classroom, is known to have positive impact on improving student's literacy skills (STARR 2004). According to *The International Reading Association* (2000), it is the responsibility of teachers to equip themselves

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with alternative teaching strategies that can transform the classroom by incorporating students' skills to address learning. The two components to a comic book are the texts and the illustrations. The illustrations assist students in developing visual literacy (Arizpe 2001). In turn, visual literacy can help students to express their thoughts, which can facilitate text development and reading skills. The artwork or images enable the participants to access higher order thinking skills (Bloom 1984). As a result, they are able to analyze the images to sequence, decode, comprehend and infer the storyline (Piro 2002). In the research group the students used their imagination to create images that had particular meanings to them. As a result they were able to analyze their images and associated text in a form of a storyline. The ability to create a storyline – reading and writing, analyzing and comprehending words – became a powerful vehicle for teaching literacy strategies. In CBRDG the students learned to read and write through their own created image and text connections (Semali 2003).

TECHNOLOGY

To finish the comic books, computer applications and other technical devices were used. The CBRDG used available technology devices and applications in the school's computer lab. I considered finished products, i.e., computerized comic books, as a combination of reading, writing, images, and comic strip format created on a computer. Postman (1993) separated technology into two distinct categories of manmade creations – invisible “high” and visible “low.” The visible technologies are the physical and easily manipulated tool-based application products such as books, Smartboard, web browser, Microsoft Word, PowerPoint, scanner. Technologies also include hardware like monitors, laptops, printers, projectors, handheld devices, and other tangible components.

A COMMUNITY BRIDGED LITERACY AND TECHNOLOGY

Lave and Wenger (1991) argue that learning is a situated activity involving sociocultural practices of a community; including relationships between newcomers and old timers. The purpose in formatting CBRDG as a learning community of practice rich academically, technologically, and socially was to empower all members to utilize their own cultures and knowledge while creating a space for inter-transfer of culture and learning. In my school students walk around with various technical devices, such as mobile phones, PSPs™, Sidekicks™, and handheld video games. However, I also notice that when students learn to use technology in ways not related to academic function, they appear incapable of transferring these skills to an academic arena (Wenger 1999).

INTEGRATING TECHNOLOGY WITH LITERACY

Data collection and analysis revealed the impact of different educational settings. In the CBRDG Brock and Stewie consistently interacted with technology to complete their computerized comic books. This section includes descriptive analyses of the

first group dialogue, mannerisms, sample writings and technology activities. At the beginning of the dialogue session, I was the focal point. As I initiated the discussion Brock, KK, and Stewie listened and participated at the appropriate openings. Daniel was absent from school and missed the first meeting. The only student without consent to be video or audio taped was Elliot. Thus, Elliot, under supervision, was in charge of the video equipment. The layout of the room dictated where we sat. Four minutes and eight seconds into the dialogue I prompted the group with a question about *what* would take place over the six-week session. The question created a space for participants to share their thoughts. As I spoke and shifted my attention between individuals there were many hand gestures, head nods, body movements, laughter, and eye gazes. Throughout the exchange, Brock and Stewie displayed signs of synchrony in body orientation, eye gazes, head nods, hand gestures, anticipatory speech, and verbal utterances.

Episode 1: Dialogue session one

Speaker	Event/Dialogue Text
Wilson	It is an open discussion group about what we are going to do over the next six weeks. What are going to do over the next six weeks?
Brock	Create a comic ((sits with his right leg on his left rocking. His right arm is on the desk and his left is braced on the chair as he looks directly at me while I address the group.))
Wilson	((Stewie also very attentive has his right arm rested on the desk; his left arm is on his lap, and he is swinging his legs.)) Yes, we are going to make comic books using technology. So in our group discussions we are going to talk about the writing process and your stories ((looking directly at Brock I ask a question while using my left hand to point to KK)) So, let's say, you Brock are sharing your story right – would you like KK over here to talk while you are telling us your story – would that be polite, KK? ((I turn my attention to KK and Stewie))
Brock	((Shakes his head while saying)) No.
KK	((Giggles, moves her shoulders and quietly said)) No.
Wilson	((Using my left hand I gesture for KK to speak up. Stewie and I giggle along with her. Brock shifts in his seat. His body is now positioned to face me.)) You have to speak up a little bit, they cannot hear you. KK, would it be polite to speak while he is sharing? ... ((As I repeat the question KK answers yeah right away without fully comprehending the words))
KK	Yeah.
Wilson	Is it polite? ((My tone changed to imply a questionable answer in hopes that she would catch on. KK covers her mouth)) ((Realizing KK did not understand the question I rephrased it using hand gestures and facial expressions as she looks at me.)) If you are sharing your story would you want me to get up and walk away and do other things?

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- KK No.
- Wilson No. So, it is all about respecting one another while we are in this space. Same as if Mr. O. is telling us something that is important. We have to listen carefully to what he is saying. ((I turn my head to look at each student and they shake their heads to my statement.)) So, the first thing we talked about was the main idea of the story. What book do you think you want to create?
- Brock Ninja. ((Stewie folds his hands in front of him and continues looking and listening to Brock while KK shakes her head and gestures two peace signs to the camera))
- Wilson A Ninja book? Okay, what about the ninjas, what do you think they will do?
- Brock Battle for world peace.

At the beginning of this vignette, Brock, Stewie, and KK's shyness were conveyed through their eyes and body movement. Their eyes and attention were focused on me. By the end of the discussion, it was evident that Brock, Stewie, and I experienced solidarity. This was particularly evident in the amount of activity displayed by them. Once they loosened up the camera faded into the background for Brock and Stewie. KK, however, began playing with the camera making peace signs and smiling faces. I initiated the discussion about the comic books. Brock immediately took advantage of a turn-taking opportunity indicated by my eye contact with the group. He zeroed in the focus of the discussion by stating his story idea. When Brock shared his story idea with the group KK looked at me, then Stewie, and back at me. I realized she wanted attention from Stewie as she displayed peace gestures to the camera. However, Stewie continued to focus on Brock. KK's playfulness with the camera breached her attention and group participation. The time she spent playing with the camera manifested in her inability to share her comic book story idea with the group. When she was asked to share she became shy and embarrassed. Brock noticed KK's behaviors while he shared his story outline. When she displayed shyness in response to the question, Brock showed verbal and physical annoyance and displeasure by sighing and rolling his eyes to her previous playfulness. The second time I rephrased the question to KK, Brock slapped his forehead in disbelief.

Not wanting to amplify KK's embarrassment, I focused attention on Stewie, who spoke softly at first. As Stewie briefly introduced his comic book story idea, Brock and KK gave him their focused attention. During the conversation I noticed that when students are in a mixed setting with a teacher led discussion they prefer to have inquiries made by the teacher rather than their peers. I realized the formal classroom teacher-student/question-answer repartee could overflow into CBRDG. The open dialogue format described at the beginning where peers can offer one another inquiry is foreign to these students. However, Brock did not shy away from asking Stewie the question, thereby demonstrating the promise of the new format for CBRDG.

LITERACY COMPONENT: CREATIVE WRITING

The first creative activity following the previously mentioned dialogue engaged the students into summarizing their comic books through illustration and text. The CBRDG and effects of segregation were immediately evident. Since the members were educated in different educational settings the shared learning space of the CBRDG played a prominent role in the enhancement of their individual academic, technological, and social skills. During the writing session Brock and Stewie immediately began writing without my assistance. However, KK required my support. It was paramount to the writing project for members to have an idea about their comics and share those ideas with the group. During the writing segment I made a noteworthy observation about an interaction between KK and myself. Although I did not stress the need to have correct grammar, punctuation or spelling I spent a great deal of time assisting KK to explore her imagination and write her basic ideas.

Reviewing the video segment enabled me to notice the physical activity of the students during the writing phase. As Brock and Stewie wrote their summaries that were shared during the dialogue phase I began to understand that each child processes information differently. Brock folds his left arm to his chest on the desk and rests his head comfortably on it. He is silent and engaged in writing. Brock's mouth moves without words as he rereads his work and occasionally erases what does not make sense to him. This section of the video segment covers 12 minutes. Stewie is also fully immersed in his thoughts and writing. Being left handed on a right-handed desk, he repositions himself to support his writing arm. Holding the paper with his right hand, he is able to write comfortably. Brock and Stewie's body positions are in full writing mode. Their legs extend back and their bodies lean forward.

KK is not writing. Folding her right leg under her left, KK's upper body slouches forward as she occasionally looks at me. Unlike Brock and Stewie the distance between KK's hands, face, and the paper demonstrates that she is not fully engaged. When I notice her, our eyes lock, and she shrugs her shoulders. Tilting her head a little to the right KK arches her eyebrows in a way that indicates she needs help. I begin to help her. As we start to work it is clear that she does not know where or how to start her summary. Her confusion appears to be a result of not fully participating in the dialogue when others shared their story summaries. I anticipated that KK would have difficulty writing her summary. During the dialogue Brock discussed his Ninja plot and Stewie talked about the boy who goes into TV world. However, KK did not have an idea. Although she came up with the idea about a girl leader, KK did not know how to expand it into a summary.

I get up to walk around to view the students' work from a different perspective. KK gets my attention by tapping her pencil on the table and looking at me. Her facial expression indicates she does not want me to go; she wants me to sit and help her. KK's left hand is holding the paper and her right hand depicts some writing as I sit with her. However, her right hand moves away from the paper to the edge of the table where she begins tapping. Brock continues writing, but Stewie stops to observe the

exchange between KK and me. The only change in his posture is the motion of his head. Stewie's pencil remains in writing position as his right hand holds the paper. Stewie is looking at KK. His attention shifts because KK begins tapping on the desk as she increases her volume to speak to me.

At the time, I did not notice the fear that manifested itself in KK's posture. She is tense, nervous, and doubtful of her own abilities. Her shoulders are raised and held tightly against her neck. Although she is looking at me, her head is not tilted upwards to speak. Only KK's eyes are shyly averted toward me. At the end of the writing session, Brock and Stewie display their completed handwritten summaries. During the dialogue session they shared their comic book ideas. As a result, Brock and Stewie were able to create simple illustrations that helped them extend their ideas into text. Brock titled his comic book "Clash of Ninjas" and Stewie named his "A Real Child in Television."

Brock and Stewie's story summaries are well-organized with a good beginning, middle, and ending. They fully understood the concept of writing a summary. Brock and Stewie did not write a long story. Rather, each wrote a paragraph with sufficient details that supported their titles. Brock and Stewie's voices as writers are evident. Both students used their imagination and personal interests. Brock's story focuses on two ninja teams – one good from Japan and one evil from China. The team from China tries to claim Japan which begins a war. Stewie's story is about a young boy who enjoys watching children's television. And, when his favorite channel is threatened with invasion from the sci-fi network he must save his channel. While Brock and Stewie demonstrate difficulty with spelling, they are able to spell phonetically. They show knowledge of basic sight words. During teacher-student and student-student interactions, several literacy skills (spelling, punctuation, plot development) were addressed. I was conscious not to impose my thoughts and opinions on their storylines. I wanted them to completely express their thought and ideas through their writing and images and not what they thought I wanted them to create. It was important to me not to trample or truncate their agency. KK, on the other hand, could not compose her story's summary independently. Due to her disability, she had a neurological breakdown between the brain and hand; she could not put her story on paper in the traditional way.

The technology component

During week two, I introduced MS Word and some basic functions to complete a document. These steps included – creating and naming their own folders, opening the application, typing their summaries, running a spell check, and saving work to their folders. My desire was to integrate technology knowledge and skills in an easy, user-friendly manner that could lead the students to further investigate the different functions of the application. As the teacher, I had to find a way for the participants to utilize their set of technical skills as a tool to access literacy. Immediately, Brock and Stewie were excited to type their handwritten summaries. I observed the students'

interactions with the computers as they typed their summaries. Prior to printing their summaries, the students read each others' work and helped with spelling and adding more information to enhance the story.

As Brock and Stewie rewrote their summaries using the word processing application they made use of the spell-checker and other style features. Literacy issues and formatting were addressed through the integration of technology with literacy. Fortunately for Brock and Stewie, there was technology available to help them overcome some writing obstacles allowing the process writing approach in the CBRDG to integrate technology with literacy skills.

Brock's typed summary displayed a standard format. He included a heading, title, and paragraph. The only formatting feature used was the center function for the paragraph. On the other hand, Stewie's work was more stylistic. He made use of the table feature to create three sections. Stewie titled each section as the beginning, middle, and conclusion. He also highlighted the words using the Bold feature and added borders to the table and rows.

In addition to completing their writing and comic books Brock and Stewie expanded their knowledge and skills of the different technology applications. In turn, through their participation in the CBRDG, Brock and Stewie demonstrated mastery of their knowledge and skills by spontaneously leading the group and coteaching members who needed assistance. The transition from a participant to a leader encouraged me to further analyze the dynamics of the CBRDG. The intense review enabled me to highlight individual activities and marked skills of Brock and Stewie as alternative ways to view academic achievement.

In the next section, I focus on Brock and Stewie's individual development (e.g., literacy and technology skills, leadership, coteaching, and membership) because these enactments are not usually associated with students labeled as emotionally disturbed. I use evidence of these enactments as a tool to argue against that policy and school-level structures invalidate lived experiences as academic achievements in favor of scientifically based results.

SUCCESS AS IT IS MEASURED THROUGH MY SOCIOCULTURAL FRAMEWORK

As a teacher/researcher and participant in the CBRDG I witnessed how the lived experiences of students labeled with disabilities interconnect with learning technology and literacy skills. Over a six-week period the members were able to improve their technology skills with the help of a skilled technology teacher and various technology devices and applications. The group also learned how to write storyline components in comic book style, how to computerize their comic books, and how to manage their time in completing projects. While all members acquired skills in this time period Brock and Stewie reached unexpected levels of expertise in a short period of time. Unfortunately, at the school and government levels, such achievements are not acknowledged.

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The tools mandated by the government to define achievement in public schools are attendance, standardized curriculum, and standardized test scores. In the following section, I use the Brock and Stewie's enactment of learning as evidence to refute deficit perspectives of special education students at the higher levels. In the CBRDG the students' lived experiences of learning and accomplishment were related to four general measurements – attendance, applied learning, achievement, and promotion.

ATTENDANCE

Attendance is salient to student learning; the video and audio taped data collection serendipitously isolate and record student attendance. In the CBRDG each session was dedicated to exploring a new facet of technology. Brock and Stewie attended all sessions. KK was in attendance weeks three and six, Daniel participated in weeks two, three, and six, and Elliot in weeks four and six. In the CBRDG the six-week curriculum covered various technology applications, equipment, and writing. Their regular attendance and active participation proved to be crucial to the learning of different technology applications and language necessary to create their comic books. Brock and Stewie's regular attendance and active participation enabled them to emerge as skilled leaders and coteachers in the group.

APPLIED LEARNING - KNOWLEDGE IN ACTION

Applied learning refers to how much and how well each student learned and applied technology/literacy skills during the six-week curriculum. In the CBRDG, group dialogue enhanced the students' writing and technology abilities. Then applied learning measured how each student applied the new knowledge toward the completion of his or her comic books. Brock and Stewie enacted the CBRDG's curricula in ways that expanded their learning. Both students demonstrated their newly acquired technology and writing knowledge by working independently to handwrite their comic book summaries and use MS Word to computerize their comic book information and different features to self-correct their writing. Also, following the training sessions on scanning, PowerPoint, and the MS Office environment, Stewie and Brock were able to independently work on the completion of computerized comic books with little assistance. They also demonstrated their skills and knowledge in front of the group while entertaining questions.

ACHIEVEMENT

As a measure of achievement in the CBRDG I examined evidence of student emergence from novice learners to peer tutors and leaders. At the beginning of the CBRDG, I provided instruction in technology and literacy knowledge and skills required for members of the CBRDG to complete their projects. However, as time passed and Brock and Stewie's knowledge and skills evolved they become

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active participating members and experienced a role-switch from novice to expert. Their newly acquired technology and literacy expertise enabled them to work independently and eventually to assist other members in working on their projects. Brock and Stewie's appetite for learning and desire to finish their comic book projects propelled them ahead of the others. Knowing that we were on schedule and I believed in teaching everyone at the same time Brock and Stewie became assistants in the group. Thus, the developing group members benefited from same-age tutoring by Brock and Stewie. The emotional and psychological improvements of the group members changed. Learning technology functions and literacy skills from the teacher and having their new knowledge reinforced by their peers enhanced self-esteem. Brock trained Daniel, who was frequently absent, on the functions of MS Word. When KK struggled with scanning her documents, Brock realized her difficulty and immediately offered assistance. As a result, KK was able to enact micro level learning by following instructions from Brock and independently using the scanning hardware and software.

PROMOTION - COMPLETED COMIC BOOKS

I define promotion as the attainment and maintenance of a privileged position in the group because an individual holds symbolic capital, expertise, and social bonds through working successfully in a group. In the CBRDG, promotion came about as a result of successful completion of the comic book project. Based on the video data, I focused on the evolution of Brock and Stewie from students who learned technology to users of technology. They continued to evolve into coteachers in the group. This transformation resulted in their elevation in status to experts and leaders in the group. Brock and Stewie achieved expert level technology knowledge and skills that they shared with their peers. In addition, the completion of the computerized comic book was a considerable accomplishment for both Brock and Stewie.

Brock and Stewie's micro enactment seemed to connect them more fully to the practices and learning process in the CBRDG. They were able to create and finish their comic books using multiple technology devices and applications. Brock and Stewie used MS Word, PowerPoint, and a shared directory to provide others with access to their work. Brock shared his computerized comic book in flat paper format while entertaining questions from others. Stewie was able to present his comic to the group via PowerPoint on the Smartboard. It is noteworthy that urban students in D75 are generally not perceived as having the ability to create social networks by sharing learned information with others, assisting peers, or developing skills associated with academic achievement.

INTERPRETING CBRDG'S MEMBERS LIVED EXPERIENCES

The lived experiences of the participating students in the CBRDG have provided me with a new perspective on technology, learning, and social behaviors of students

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labeled with disabilities. According to van Manen (1990), government and school reliance on the disability usurps the lived experiences of students with disabilities. The caveat here is that technology is not magical and although the policy mandates that the use of technology in education is academically transformative, it might not be able to captivate all students' attention. I witnessed capital exchange (learning technology from me and each other), active individual and collaborative engagement with technology (e.g., using MS Office and the Smartboard), and peer teaching (e.g., Stewie coaching Daniel in MS Word). In this respect, as the teacher, I had to be willing to release some of the power that comes with my role and allow individuals in the group to be agentic. This required me valuing capital that students brought to CBRDG. Brock established the CBRDG structure in which he enacted coteaching that supported KK's learning. Also, my technical knowledge as a teacher and researcher was enriched by the lived experiences (e.g., practices, dialogues, membership) of the CBRDG that informed my work, language, and power (van Manen 1990). In focusing on the nature of lived experiences in the CBRDG, I have "given over to some quest, a true task, a deep questioning of something that restores an original sense of what it means to be a thinker and researcher" (p. 31) and teacher. As van Manen (1990) suggests, students are encouraged to dialogue as a way to describe their experiences located within specific situations. The following is an excerpt from the last dialogue as a group.

Episode 2: Expanded students' roles in the CBRDG

Speaker	Event/Dialogue Text
Wilson	How do you guys feel about the comic books?
Stewie	Well, I feel excited, 'cause before, I did less work 'cause I had trouble. But now I know exactly what to do and I got more further ((Stewie speaks first and his voice is clear))
Wilson	What troubles were you having?
Stewie	Well, I had difficulties understanding what to do and how to draw things the way I wanted
Wilson	Did anybody help you?
Stewie	Yes.
Wilson	Who helped you?
Stewie	Brock.
Wilson	Brock helped? ((Wilson looks at Brock and asks)) What did you help him with?
Brock	I helped him to understand how to scan. I helped him when he had some problems writing the summary. And that was pretty much it.

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- Wilson Excellent. I am glad. So, what do you think was the most important thing you learned about the creation of a comic book?
- Daniel ((Daniel says “oh, oh” and raises his hand at the same time. Then hesitantly speaks an answer the question.))
- Well the most important part about creating the comic book will have to probably be ... I don’t know ... maybe Brock can answer it.
- Brock I think the most important part for me was making my conclusion. It was so hard that I actually had to put “to be continued.”
- Stewie I think the most important thing I learned about the comic book was how to scan and how to plan it out
- Wilson So, what did you learn about planning?
- Daniel About planning?
- Stewie Well, first about planning out I had to brainstorm.
- Wilson ((Shaking my head in agreement while repeating his words))
- You had to brainstorm.
- Daniel The most important or trouble?
- Wilson Either one
- Daniel Um, for me, the most trouble I had in planning was coming up with the title and what the story was going to be about - were they real. It was hard, I was asking like, [inaudible] it was really hard.
- Stewie How did you come up with colors of emotion?
- Daniel Yeah, uh, thank you. Well I picked the colors of emotion because ...
- Stewie Or did you want to do a story about a kingdom using and exploring the colors and just put them together
- Daniel I did that

This episode is important because Stewie emerged as the leader as he directed questions to Daniel; his peers identified Brock as coteacher, and the students shared their appreciation for learning how to use technology to create a comic book. Although, I facilitated the dialogue in the group, Stewie changed the flow of the conversation by speaking first. Looking back at the video data, Stewie was a little shy and his voice was soft and low. However, as time progressed, he became a vocal, active, and central figure in the group. Stewie projected his voice clearly saying, “I feel excited.” His feelings of excitement grew out of his positive experience of peer assistance, which enabled him to finish his comic. Stewie’s statement “I feel excited” summarized many of the feelings that other students had about the production of their comic book. His comments appeared to reflect a need for action

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among the group members. As he spoke, he acknowledged Brock's assistance. Then Brock spoke about the help he had given to Stewie. The rate at which the conversation switched focus was amazing and speaks to the ability of students to focus on an existent goal once they share a collective need for it. Next, the dialogue switched to Stewie inquiring about Daniel's comic book title. I sat back and listened to their conversation. I thought about how the teacher in a traditional classroom facilitates and controls the flow of conversation. The teacher gives the information then the student answers back. The student is oppressed and obligated to respond to the teacher. There is rarely an opportunity for student-to-student dialogue about their shared experiences. By creating a space where stakeholders can talk across the boundaries of disability and traditional classroom roles the CBRDG transformed the conventional educational setting into an arena where all participants had a vested interest.

CBRDG NOT A TRADITIONAL CLASSROOM

I realized that an orderly and well-managed classroom was equated to a learning environment. Controlled classrooms usually meant students remained quiet, in their seats, and were required to raise their hands to acquire the attention of adults. When environments are controlled like this, students are not permitted to freely explore their educational settings unless the teacher directs them to an activity. However, in CBRDG students were not restricted to a specific seat or area. Rather they were encouraged to explore their learning environment, as long as they did so with care. The educational differences between the students labeled as disabled who attended general education classes and those in a self-contained classroom were manifested in the CBRDG. Brock who was mainstreamed into regular education classes was not afraid to explore his surroundings. He walked around the lab, unaware or oblivious to the camera, accessing the different technologies. Brock also read the information that accompanied each item. Brock touched the items with respect and when he was unclear about something he inquired about it. On the other hand, KK who was situated in a restricted setting was very conscious of the camera and often played in front of it. At different times she looked at the camera, performed dance moves, or gestured peace signs. I believe her attitude toward school and her behaviors probably resulted from her experience as a student in a self-contained classroom setting.

CONCLUSION

“I find that the great thing in this world
is not so much where we *stand*,
as in what direction we are *moving*.”
Oliver Wendell Holmes (1809–1894)

Both, NCLB and IDEA view the integration of technology into education as a revolutionary tool. While in the CBRDG the prospect of using technology to create a computer generated comic book brought the students together, my experience demonstrates that it is incapable of holding all students' attention during my instruction. This idea put forth by education policy fantasizes that technology might be magical and transformative. This is deceptive notion because not all students will be charmed by technology. Therefore, teachers must equip themselves with alternative teaching strategies to address a diverse learning environment. In this study Stewie and Brock were fully engaged with technology but KK was not. This supports my assertion that technology use in the classroom might not be able to hold all onlookers.

Brock and Stewie demonstrated significant academic competence through their use of technology. They initiated dialogue and demonstrated various technical skills through individual activities and by assisting their peers. The academic practices of the CBRDG cannot be quantified by governmental standards. Based on my exposure to both self-contained and inclusion classrooms I believe enactment of newly acquired skills (as demonstrated by the completion of their computerized comic books) may happen for Stewie and Brock in their general education classroom, but most likely will not happen in KK's classroom.

I use Holmes' quote to open this section because it sums up how I feel about the abilities of students classified with disabilities. At the beginning of this study I was focused on the learning and development of literacy skills through the creation of computerized comic books with D75 students. Fortunately, I was not held hostage by preconceived ideas about the students' conduct, old experiences, or false hopes about their learning. Instead, if I could understand the process by which the students' lived experiences were integrated in the CBRDG, I could begin to understand how to design an instructional matrix that is welcoming to teachers and students. I approached the phenomenon of student experiences in the CBRDG through investigation of their dialogue, technology skills, and work as well as their lived experiences as D75 students in different educational settings. We met as a group and we let our desire to learn from each other and our shared experiences lead us. I walked away from the CBRDG a renewed person and a better teacher and researcher. I thought I would be offering something brilliant to these students. However, they gave me something words cannot express.

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CHRIS HALE

8. STIGMA, LD, AND PRIVILEGED HABITUS IN AN URBAN SETTING

Abstract The study described here is the result of ethnography, centered on two privileged parents (Lawrence and Elizabeth), living in a relatively affluent neighborhood of Boston. They have two children: Simon, 14 years old, who is attending his last year at the Samuel Griffin School (heretofore referred to as Griffin), a private school for children with learning disabilities (LD), where I worked for 2 ½ years, and Elliott, 12 years-old, who attends Ahavat Chesed (hereafter referred to as Chesed), a mainstream private Jewish school. Simon has been diagnosed with dyslexia (a form of LD) and originally attended Chesed through second grade but has attended Griffin for these last six years. Lawrence and Elizabeth's relative privilege is an important focus of this research, as is their experience of their son's LD. It is the interaction of these two features of their experience that provides the impetus for and represents a major focus of this study. The emphasis is on the tension between these parents' efforts to reproduce their privilege through their son's education and the obstacles they face as a result of their son's academic failure.

The narrative reported here is derived from conversations in which Lawrence and Elizabeth discuss issues relative to the three years Simon spent at Chesed. The story of their struggle to succeed there is one that elicits consideration of the mechanisms of the reproduction of privilege, the stigmatization and segregation of difference, and personal transformation. While the ethnography on which this chapter is based provides many other data sources (e.g., tape recorded interviews with teachers and administrators from Griffin, tape recordings of meetings at the school, notes and reports from Simon's years at Griffin, an interview with Simon's psychologist, random encounters with Lawrence and Elizabeth at and around Griffin, encounters with Lawrence and Elizabeth at school events, e-mail correspondences with Lawrence and Elizabeth, encounters with Simon during his days at the school, and my own recollections of my experiences as a reading specialist at the school and as Simon's former teacher) here I describe portions of two conversations that occurred during our third and fourth videotaping sessions. I chose these excerpts because they serve as a preface to Elizabeth and Lawrence's narrative of their experiences at Chesed (reported in Hale 2011). Topics covered in the discussion include but are not limited to Elizabeth's educational background, the resistance of parents to acknowledge their children's learning challenges, the stigma associated with having

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a child with learning issues in a private mainstream school, and Lawrence and Elizabeth's personal transformations, as a result of their experiences. The reason I chose to present these portions of these conversations together in this chapter is because, for the most part, they provide insights into Lawrence and Elizabeth's experiences of the contradictions between their expectations and their experiences relative to Simon's experience at Chesed.

STANDPOINT STATEMENT

It is important that I make clear to the reader my preconceptions and dispositional orientations relative to disability, class-based privilege, and parenting. Generally, I have always been critical and suspicious of the wealthy. This dispositional propensity combined with a lifelong preoccupation with justice has led me to believe that it is the moral responsibility of the haves to help the have-nots. The accumulation of wealth without generosity and social responsibility is at odds with principles of equity and fairness. It was with this orientation that I began working, some four years ago, as a reading specialist at Griffin. This somewhat confrontational and moralizing stance also influenced the choice of this research topic for my doctoral dissertation. This, of course, was a problematic starting point for the research. How could I hope to treat my research participants fairly or conduct the research in ways that met the authenticity criteria of Guba and Lincoln (1989) and provided the beneficence required by the Institutional Review Board that watched over ethical issues of research with human subjects at my university? I realized that I needed to make a conscious commitment to tempering my biased perspectives and treating Lawrence and Elizabeth fairly.

Thankfully, the nature of phenomenological research combined with the influence of two other of my dispositional characteristics allowed me to balance criticality with empathy. van Manen (1990) states that phenomenological research can have a transformative effect on the researcher. The research itself is often a form of deep learning that leads to a transformation of consciousness and increased sensitivity and thoughtfulness. My experience of this transformational process has been informed by dispositions relative to academic failure and parenting established by my personal history. As a child, I struggled in school and barely graduated high school. My decision to choose special education, as a career was likely influenced by that experience and has been a source of empathy for Lawrence, Elizabeth, and Simon's experience of stigma and alienation. Also, as a parent, I understand, at a deep level, the impulse to protect and nurture one's child at all costs. In fact, during the data collection stage of this project, my daughter became ill and I was forced to take her out of school for a couple of months. The stigma associated with her illness contributed greatly to that decision.

THEORETICAL FRAMEWORKS

The analysis used in this study is largely based on the work of two theorists. The first is Pierre Bourdieu, whose work and that of other theorists who have expanded

on or have done work closely associated with his theories are employed as critical theoretical lens. Bourdieu's theories of the sociology of class structure are an important tool, given that the reproduction of class advantage is an important focus of the research. Associated concepts such as fields of struggle, forms of capital, and habitus also are addressed. The second theorist whose work is extensively referenced here is Jonathan H. Turner. His sociological theory of interpersonal behavior is employed for the purposes of analyzing data, related to emotions, identity and transactional forces, drawn from the videotapes of our conversations that were the data resources for this research.

THE ROLE OF LITERATURE IN THIS CHAPTER

For the most part, this chapter will reference theory and research on as needed basis. The analysis and discussion will dictate their application. Having said that, it is important at this point to discuss topics relevant to LD discourse. While it is not directly addressed in the analysis here, it is implicitly present throughout the research and therefore important background knowledge for the reader.

LD discourse

Like all discourses, the discourse of LD is ideological, representing certain values and viewpoints about relationships among people (inclusion or exclusion) and the ways social goods should be distributed. The theory of LD is generally understood as a discrepancy between ability and achievement due to neurological dysfunction (Dudley-Marling and Dippo 1995). While recent federal law no longer *requires* school districts to consider "a severe discrepancy between ability (IQ) and achievement" when diagnosing LD (IDEA 2004, Section 1401), this remains a core belief of many within the discourse, including Lawrence and Elizabeth and the administrations of both Griffin and the private boarding high school for children with LD, where Simon attends post Griffin. Adherents to LD discourse generally endorse the medical model of conceptualizing LD. This holds that LD is a condition intrinsic to individuals that requires professional intervention (i.e., identification, remediation, etc. by psychologists and specialists) (e.g., Reid and Valle 2004.) While the field of LD claims to accommodate diversity by providing for the needs of individuals with diverse abilities, it works to reaffirm rigid conceptions of normal behavior by emphasizing adaptive skills, coping strategies, and conforming ways of thinking, talking, and interacting to accepted conceptions of normal (Dudley-Marling and Dippo 1995.)

Preliminary note on the interpretation of narrative

As much as possible, I have tried to maintain the integrity of each conversation represented in this chapter. Of course, I have made decisions about how much of

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which conversation to include but I have attempted to find natural places to begin and end segments so as to be as respectful as possible to the flow of ideas and expressions of self. The narrative rendered is both polysemic and polyphonic in that it blends into a narrative pastiche the voices and understandings of Elizabeth and Lawrence and my own. It is informed by all of our stories, our voices, and the systems of meaning that we employ to make sense of the world. While this is always true, when you tell other people's stories, it is intentional in this case and an expression of my standpoint as a researcher. I attempt to pay particular attention to the diversity of meaning making systems that engage in that construction of this story. I openly represent the different voices to give authenticity to the resultant narrative. One of the ways I do this is through respect for the gestalt of the conversation. Each section begins with a narrative of a conversation. I treat each narrative as a gestalt from which analysis and discussion flow. By maintaining the integrity of these conversations, I am retaining the intentions of the speakers and the meanings expressed through the give-and-take of interaction. In this way, I preserve Lawrence and Elizabeth's authorship as much as possible.

THE SETTING AND THE ACTORS

The conversations among Lawrence, Elizabeth, and me, on which this chapter is based, take place over two videotaping sessions in the kitchen of their apartment, seated at the breakfast bar after having eaten dinner together or as they prepare or clean up after dinner. Elizabeth often does the lion's share of the talking although Lawrence will dominate at times. Elizabeth is in her 40s and relatively tall and thin. Her hair is dark, tied back yet short. Her nose is pointed and somewhat small. Her mouth is relatively small and her eyes are dark brown. Her facial expressions, gestures, and body orientations are often intense and expressive. Lawrence is in his 50s. He is an ex-wrestler and is built like one. He is around six-foot tall with powerful shoulders and a deep chest. The top of his head is bald except for a few tufts of brown yet graying hair here and there. His eyes are brown. Lawrence's profile looks like it should be on a Roman coin. His wrestling build combined with his Roman features, make him look like an aging gladiator. His face is not nearly as expressive as Elizabeth's. Mostly he contains his emotions but occasionally he will smile a little while Elizabeth speaks. There is often evidence of synchrony between them during our conversations, head nods and verbal acknowledgments. Occasionally, they will disagree but on those occasions, Lawrence almost always yields to Elizabeth, thus avoiding conflict.

Chesed as a field of struggle

While this ethnographic study is centered on Lawrence and Elizabeth, Simon plays a major role. His entry into kindergarten at Chesed (a mainstream Jewish private school in an affluent neighborhood of Boston) is an important feature in their lifeworlds. It represents a moment of great hope and one that has become associated

with the beginning of their LD experience and therefore much pain. Chased is a highly competitive educational field, in that the stakes for agents are high. Success at a school like Chased usually means entry into a top rate university, possibly the Ivy League. The concept of a field, or a field of struggle is important here. A field of struggle, in a Bourdieusian sense, is a social realm within which agents compete for cultural, social, and other forms of capital (Swartz 1997).

Perfect combatants?

Elizabeth and Lawrence are perfectly suited to succeed in a field such as Chased. It is a Jewish private school therefore their Jewish ethnicity and relative privilege qualifies them nicely. If they had not been perfect for the school, Simon would never have been accepted. Elizabeth and Lawrence are also well fitted to be parents at a school like Chased because of the class-based habitus they share with other parents there. According to Bourdieu (1980), habitus, or dispositions to act within a field, is conditioned over time within families. It is structured and structuring in that it has a dialectical relationship to objective structures within society. Individuals and families develop habitus in response to historical and societal structures while at the same time, their actions, unconsciously informed by their habitus, influence societal structures thus reproducing positions of relative privilege. Bourdieu (1977) also argues that the concept of habitus holds that actors act strategically and practically at the subconscious and conscious levels to meet their goals, rather than in direct reaction to external sets of formal rules. They are tactical improvisers whose behaviors are informed by deeply ingrained past experiences to the opportunities and restraints offered by present situations. Elizabeth and Lawrence expected to succeed at Chased. Their habitus adjusted their aspirations and expectations to the high probability that Simon, and through him, they would enjoy the same level of success at Chased commensurate with others of their class position (Swartz 1997). Their habitus affords them access to forms of capital appropriate to such a field. Capital comes in several forms, the most commonly referred to being economic, cultural, social, and symbolic. As far as cultural capital, Laurence and Elizabeth know how to get things done. They have strong communication skills and know whom to call when they want a problem solved. Informed by their habitus, they know the “things to do or not do, things to say or not say” without conscious thought or calculation, in a field such as Chased (Bourdieu 1980, p. 53). They clearly have sufficient economic capital; tuition was no problem and they were able to pay for extra services (e.g., tutors, therapists, etc.), as the need arose. According to Bourdieu economic capital is at the root of all other forms of capital (Swartz 1997).

The contradiction of Elliott

In the end, Lawrence and Elizabeth failed at securing success for Simon at Chased. This fact is the central contradiction described in this research. They walked in the

door, fully equipped to help Simon succeed yet in the end they were forced out the back door, having failed. This contradiction is further deepened by the fact that Elliott, Simon's younger brother, remains at Chesed today, where he is successful and happy. Elizabeth and Lawrence are successful Chesed parents (of Elliott) yet, at the same moment, they are not (of Simon). The question raised by this contradiction is what happened? How could they succeed and fail simultaneously? They are who they are. Their habitus could not have changed from one moment to another. The important variable here is, of course, Simon. This brings up another question. Why? What is it about Simon that contributed to this contradiction and the unfortunate events it set into motion? The answer to this question is at the core of this research. Simon learns differently than other people. He needs different structures to support his learning. How did this fact contribute to their undoing at Chesed? The beginning of the answer, I believe, lies in the narrative related here by Lawrence and Elizabeth.

In this chapter, several issues are discussed. First in order to establish Elizabeth's enthusiasm for competing for bragging rights with other mothers at Chesed, the roots of her competitive nature are explored, based on her description of familial experiences that she believes established her need to distinguish herself. Next, a conversation among Lawrence, Elizabeth, and me is analyzed with the purpose of establishing evidence of the feelings of alienation and estrangement that they attribute to their exclusion from the community of mainstream private school parents due to Simon's academic difficulties.

A brief narrative Simon's years at Chesed

As portrayed by Lawrence and Elizabeth, Simon's childhood from birth up until the point he entered Chesed in kindergarten was a happy and positive period for the whole family. They were buoyant and easy-going parents and Simon was a "happy, smart, engaged, [and] socially active" child. It was when Simon entered kindergarten that his academic difficulties began to become apparent. His teachers expressed some concerns and he began to resist going to school to avoid certain tasks. Yet while they intervened when necessary, they were generally unconcerned.

First grade was a very troubling year for the family. Simon "started to have meltdowns at school" and began to "act out at home." His teachers suggested that while he was clearly very smart he was not trying. In fact, Chesed placed Simon in a remedial reading group without notifying Lawrence and Elizabeth. To Elizabeth's horror, during a chance encounter, his reading teacher told her that she thought Simon was dyslexic, and his reading difficulties caused him to experience ridicule by his peers.

Second grade was as bad or worse. Having decided that inept teaching had contributed to Simon's troubles, Lawrence and Elizabeth requested a more experienced teacher, but the teacher the administration promised was eight-months pregnant. Frustrated, they took matters into their own hands. They paid for a tutor

to pull Simon out of his class for reading remediation sessions 5-days a week, they put him in therapy, they put together team meetings to focus efforts to help Simon, and they had him evaluated by a neuro-psychologist, who officially diagnosed him as dyslexic. At one meeting a psychologist, associated with the school, described Simon as being in a psychologically “toxic situation.” Lawrence and Elizabeth “were devastated” and Simon “was just caving in.”

Simon’s career at Chesed ended cruelly. Elizabeth and Lawrence had arranged a large team meeting. The meeting was planned for Tuesday but on the Thursday prior they received a letter from the school, telling them they would not be receiving a contract for the following year. As Elizabeth put it, they were escorted “to the door. Thank you very much.” They were forced to scramble to find a school that could help him while providing a sympathetic environment. After a period of self-education and option weighing, they enrolled Simon in Griffin for the following year.

COMBAT, DEFEAT, AND TRANSFORMATION

Soldiers go to war and come back changed. Some, having experienced the horrors of war and/or the personal trauma of injury, can experience paradigm shift. They may reassess their motivations for becoming a soldier or question the basic morality of war. For Elizabeth and Lawrence, raising Simon has been a kind of a war, of which their experience at Chesed was only the first battle. I do not mean to say that every moment was terrible or that there was no joy in raising Simon. On the contrary, their love and devotion for each other and their children evince many moments of familial bliss over the years. They clearly love Simon and Elliott and the boys love each other. Despite the fact that the vast majority of the narrative amassed in this study speaks of pain and alienation, the signs of this love are often evident in the small things, the unsaid things: the moments of synchrony, the head nodding and significant eye contact, between Lawrence and Elizabeth while telling their stories and the playfulness and gentleness between Simon and Elliott. Yet much of Lawrence and Elizabeth’s experiences over the years since Simon entered kindergarten have been fraught with conflict. These experiences have changed them and have inspired them to take stock of their basic values. From the first moment that Simon stepped into his kindergarten classroom at Chesed until today, there have been many trying times and much pain. Lawrence and Elizabeth have experienced scrutiny and disenfranchisement at the hands of professionals, dealt with the emotional fallout – the fits, the violence – of Simon’s emotional response to failure and alienation, and, at times, discord between themselves. All of this has changed them. They began like other mainstream private school parents, confident and self-assured, expecting nothing but success for Simon (and through him, themselves). They were more than ready to step onto the field of struggle that is Chesed. Years later they question that which went unquestioned at the time, the entitlement of their habitus and the value of competition, and have come to espouse different values.

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The roots of Elizabeth's competitive verve

In this section, I explore Elizabeth's desire to compete as a mother at Chesed. Generally a competitive person by nature, Elizabeth found this aspect of herself frustrated in her role as Simon's mother at Chesed. In this study, Chesed is being considered a field of struggle for the purposes of analysis but it is clear that Elizabeth also sees it in this way. She came to the school expecting to distinguish herself as Simon's mother. She says as much in our fourth videotaping session, which is documented below. Here though, she describes what she believes to be the familial experiences that laid the ground for the competitive enthusiasm that drives her to compete as a professional and as a parent in a field such as Chesed. She discusses aspects of her relationship with her parents (focusing on her father, for the most part) and recounts, with intense emotion, an experience that she sees as a seminal event in forming an intrinsic need to distinguish herself through competition.

The Ivy League denied

For most of our conversation, Elizabeth and Lawrence are sitting opposite me at the corner of the wraparound bar in their kitchen. Lawrence has just finished discussing his experiences in high school and college. He was definitely not focused on academics but he graduated college and has a very successful career. His stories are amusing and Elizabeth is clearly entertained. But when the subject turns to her educational background the emotional tone of the room changes dramatically. I broach the subject as she slips back into her chair, after taking the dinner dishes to the sink. She looks over at Lawrence, smiling with apparent embarrassment. Lawrence is not on camera at this point but it seems clear that he is making an expression or a gesture, perhaps teasingly, that triggers a reaction beyond a response to my question. Her urge to smile is so strong that she turns away from both of us attempting to school her face. "Um," she begins looking at the table, averting her face as she suppresses her grin. Then facing me, her face relaxing, she begins in a surprisingly neutral voice: "I, uh, went to Kaufman University and I had a double major in marketing and commercial arts. I thought I wanted to be an advertising creative. And uh...I went to work in media in an advertising agency." Lawrence, still off-camera, decides that we will cut to the chase. He interrupts, almost talking over her, and asks, "Why did you go to Kaufman?" (Clearly the significance of this topic is an important feature of their relationship and Lawrence is either goading or teasing her.) Elizabeth shoots him a look, initially surprised at the interruption and as she understands his question, her lips compress in a more successful effort to suppress her smile this time. She pauses and reflects, her gaze inward, lips in a tight line. But then, the line relaxing into a slight smile, she restarts her story. She begins, explaining that her "education is a bit of a sore subject," but then the beeping of my watch alarm interrupts her. She asks if it is my video camera malfunctioning and says "too bad," jokingly

expressing mock relief at avoiding this topic of discussion. The alarm is to remind me to take my pill, which I have already done at dinner. Embarrassed, I quickly explain and we continue.

Elizabeth begins by describing her family structure. She says that she is the oldest of three children, with two younger brothers, but then moves on to her parents. Here we are getting into salient territory. She begins with what she describes as a disclaimer. Her parents are “really great people ... very, very earnest” with “good values.” But here is the salient part and this is supported when her voice becomes tremulous with emotion as she continues. Her parents “didn’t change with the times and they were of the opinion that women don’t need to be educated. They just need to get married.” She pauses, her voice fills with even more emotion, and then explains that not only was she not supported in her educational goals, she was “discouraged.” Her voice breaks as she says discouraged. Her father would not let her go away to college, to an Ivy League school. She could only go to a college to which she could commute from home and on a daily basis. So she ended up going to Kaufman College, from which she “graduated with highest honors.” After explaining this she pauses, eyes down, frowning, and then, dipping her chin in an expression of resignation, she says, “I could’ve done better.” In an attempt at bravado, she flashes a bright, yet forced smile. I ask her what going to a better school would have done for her. At first she says that she does not know but then Lawrence intercedes with a self-deprecating joke possibly in an effort to break the tension. “She would have married a guy, now working on Wall Street.” He laughs at his joke but Elizabeth only does so perfunctorily. She is in the zone and she does not want to be interrupted. Answering my question, she says she does not necessarily think that she would be happier but even though they “have a wonderful lifestyle,” she is not sure that she has ever reached her “true potential.” She means her potential in terms of “career capabilities.” She means that she does not think she is as confident as she should be and that she has not had a chance to be “among really smart people.” She “never really got the opportunity to see how smart” she really is. She thinks she is “really smart” but has not “really been able to exercise that,” or prove that in a competitive educational environment, like an Ivy League school. Paraphrasing for her I say, “So you wanted a more challenging atmosphere, to test yourself.” Here strong emotions come to the fore once again. She makes three false starts in quick succession (“Um, I wanted to- I wish- If I had it to do over again”) and then, her voice wobbling with emotion, she continues, “I would, um.” She pauses, eyes on the table, and then, collecting herself, she looks up, her voice building in strength, showing a little anger, she says that she should have “stood up for myself a little more” and if her “father didn’t want to pay” for her education, she should have found her own way to put herself in a situation where she could “be the best [she] could be.” If she had been in a more challenging environment, her life would be “more rewarding and more complete,” with more opportunities. But then in an attempt to lighten the mood and show courage, she says, “But in the meantime, I have a really huge successful career that I’m very proud of.”

Shame as motivation

It seems clear that Elizabeth feels shame here. Turner (2002) describes shame as a second-order emotion. It is a feeling of having behaved incompetently in reference to societal norms. Shame is a composite emotion, combining three emotions, the most prominent being sadness at self coupled with lesser amounts of anger at self and still lesser quantities of fear about the consequences of actions to self. It is clear from watching and listening to Elizabeth that sadness is strongly present as she speaks about this topic. The way her voice cracks and the extended moment she spends staring at the table speak of melancholy and regret. Elizabeth's anger at herself is apparent when she says, "I would... have stood up for myself a little more...." but then anger builds and it becomes clear that it is directed at herself when she asserts that she "*should* have found" her own way to an Ivy League school. Her fear of the consequences of her failure to make it into an Ivy League school is more difficult to detect. Perhaps she fears that she will never reach her "true potential" to be among "really smart people" and/or experience the "more rewarding and more complete" life she imagines.

Turner (2002) explains that shame is one of the most powerful emotions in human experience. It is essential to the viability of social structures. When people experience shame as a result of negative sanctions from others or deficit self-appraisal (more likely in Elizabeth's case) they are motivated to act more competently in reference to societal expectations. In this way, shame encourages people to make amends and to do better, thus bringing them in closer alignment with normative expectations. Therefore Elizabeth's shame motivates her to redress the wrong of having missed the Ivy League and to prove herself worthy of the company of "really smart people." She has shown that in her ability to develop a "really huge successful career." To this purpose, Simon is her surrogate and the really smart people are the children of the other private school moms. Below she makes explicit this connection between her drive to show her smarts and conform to an internalized standard of intellectual behavior and her desire to compete with the other moms on the field struggle, that is Chessed.

ALIENATION, REEVALUATION, AND TRANSFORMATION

The responses of other parents to Simon's academic struggles and his rejection by Chessed evoke many negative emotions for Lawrence and Elizabeth. Elizabeth still feels the pain associated with her experiences of social isolation and her frustrated desire to compete for recognition within the school community. Lawrence feels alienated from many other parents. He feels scrutinized and estranged due to the public nature of Simon's learning differences. He rails against the hypocrisy and denial of other parents, whose children, he believes, also experience learning "issues." Both Lawrence and Elizabeth report having experienced enlightened transformation as a result of lessons they have learned as Simon's parents. Evidence of their alienation as well as their transformations can be found in the following narrative of one of our conversations.

This is our last half hour of our last videotaping session together and Elizabeth and Lawrence are sitting across from me for the last time at the corner of the breakfast bar and their kitchen. Lawrence is sitting forward with his elbows on the counter, discussing his experiences of other families who have children with academic issues. His affect is intense and he is driving home his points with dramatic gesture and expression. Elizabeth is sitting back in her seat, her expression muted. She has her own agenda today but the theme is similar. Her discussion is more personal, more descriptive of her experiences of social isolation and the changes they inspired within her. While their narratives run along separate courses, emotionally they are in synchrony.

This part of our discussion begins as an exploration of Lawrence and Elizabeth's responses to the experience of Simon being labeled dyslexic. At this point, I ask Lawrence about how other people, friends, family, coworkers react to Simon's school troubles, his being labeled dyslexic and his subsequent ejection from Chesed. He barks a sardonic laugh. Smiling at first but then taking on a professorial manner, gesturing determinedly as he makes his points, he begins to explain the private school parent facts of life to me. He begins with sarcasm: "Look. *First* of all, we live in *Boston*, where *every* kid goes to George Taylor. You know. And *no* family has *any* problem." Pausing for effect, he punctuates the statement with a sharp nod and makes significant eye contact. He continues earnestly, raising his eyebrows in emphasis at several points: "*Once* the family, you know, has enough *courage* to go *public* that you have an *issue in your family*, then you realize that *every* family has *something* going on in their family, about their children's *education*." This is so prevalent, he says, that one would find learning issues in 10 out of 20 children. "Some parents deal with it." But others are in denial, the fathers in particular. They deny their children's learning issues, instead seeing them as lazy. This has affected his relationship with some fathers. He quotes one of them, saying, "There's nothing wrong with my son. He just has to work harder." Of course there are some families that cannot afford tutoring, therapy, etc. and they are just forced to "limp along," unable to give their children what they need. The bottom line to this is that families like his and Elizabeth's are not alone in facing school troubles. "Every family has it."

Elizabeth is not comforted by Lawrence's attempt at wisdom. "Yeah, but you don't fit in anymore. You're not part of that circle," she says, "when you are the one with the *troubled* kid, the *problem* kid, the *LD* kid you're not part of that mother group because they don't understand how to talk to you." I asked her whether her estrangement from the other mothers began when it became apparent that Simon had learning issues. As we discussed this, she was getting sadder by the moment. "Yeah," she says in a very small, sad voice. "Parents of mainstream kids don't understand what it means to parent an LD kid or what it really means to be LD." She illustrates this by telling a story about a recent encounter with a mother at Chesed with whom she has been friendly, a mother of one of Elliott's peers. Oblivious to the scope of Simon's learning issues and how Elizabeth must feel about it, her friend asked

where he would be going to high school. She suggests a few mainstream private schools, noting that they have learning centers. Elizabeth is offended at the woman's ignorance and as she recounts the story she portrays the woman as clueless and insensitive.

I ask her whether she feels that the other parents judge her or judge Simon. She replies that it is difficult to tell because she judges herself. Lawrence jumps in, in a very definitive manner. "Nobody judges themselves harder than Elizabeth," he says. "So, I'll answer the question. Yes, especially the mommies judge the kids and to a certain extent judge the parents." I ask whether they are judging them for not doing the right thing for Simon and Elizabeth replies immediately saying that they judge her as if "you're defective in some way." Lawrence says he is not sure if they see them as defective or not doing the right thing. He feels that other parents judge him and Elizabeth just because "there's an issue there." He illustrates this belief with a story about sharing a trip downstairs in the elevator with a family they know from the building. Their daughter was going to interview at a well-known private school. He pauses raising his eyebrows and looking at me pointedly. His meaning is clear, given my knowledge of him and our previous conversation. This is another status seeking private school family. The mother is standing in the corner of the elevator "with her chest out, her head up," so proud. Lawrence describes his thoughts at that point. Is there a cloaked insult here, he asked himself? "Is she... saying, 'well, I wonder where Simon's going to go to high school?'" He smiles conspiratorially at me as he describes his imagined response to her unspoken one-upmanship. "Oh, her second one also has some issues. You know. She never talks about that." His spite does not really last though because he normalizes her hypocrisy, saying, "I believe it's just human nature."

As our conversation continues, there is evidence of intense synchrony between Lawrence and Elizabeth. They make frequent eye contact and he regularly nods along as she speaks. Less interested in derision, Elizabeth finds regret, sadness, and satisfaction in Lawrence's story. Two things come to mind for her. The first evokes wistful feelings. She makes poignant eye contact with Lawrence, and he meets her eyes nodding as she speaks. Her voice heavy with emotion, she says, "I wish *we* were going through *those* applications and *those* schools." And then briefly looking back at me, putting up a reassuring hand, she says, "Honestly, I swear to God. This isn't just for your tape or for anybody else's comfort," she begins, glancing downward with a quick nervous laugh, then reestablishing eye contact with Lawrence, who returns it nodding along again, "but I think, you know what, I wouldn't be half the mother and half the parent. I wouldn't have half the relationship I have with my kids, if we were just doing it ... on the track." Chopping along in a straight line forward with their hand, it is clear what "on the track" means to her. She means following the typical private school parent trajectory. She goes on to say that because of all the "struggles" they've gone through, their family and their marriage are "richer" and as a result of their improved parenting, their children are "going to be healthier adults." Caught up in her transformation narrative, Lawrence describes his own

transformation. “This I say,” he begins definitively. “I’ve learned to listen to my wife and listen to my children. If I didn’t go through this, I don’t think I would’ve listened to my children.”

Elizabeth continues, focusing on the theme of personal transformation. “No,” she says. If they had not gone through their struggles with Simon’s school troubles, she would have got “caught up in the competitive stuff” that comes with being a private school mother. I ask her if she means that she would have competed with other mothers over how prestigious their children’s schools were. “Yep,” she says proudly. “Cause I’m competitive,” she states provocatively. She is brazen here, as if she is flaunting a controversial characteristic. Her voice becoming more serious. She then revisits the roots of her competitive nature, her family history, where her parents judged her “very critically.” She “always worked really, really hard for their approval.” In fact she mostly sought her father’s approval, “which he would never give.” And then, voice becoming perkier, she describes how she turned that experience into something more positive. “So, how you *get* that,” she asks. “You get that by doing better, being smarter than the *next*... guy. So that’s what I do,” she says with a careless toss of her head. Summing up, she looks at Lawrence again (who smiles back) and says, “So, I was totally susceptible to the worst of the... mothers in Boston private school competition.” Smiling, she continues, “Totally. I would have welcomed it, to play in that game. Cause that was a game, like the [slight toss of her head] Ivy League. That was the Ivy League, uh, circuit that I always felt excluded from. And this was going to be my entry point. This is the end of our last discussion of our last video taping session. In closing, I tell them how great they have been and Lawrence smiles and Elizabeth begins to laugh. It feels like there is a release of tension.

Disparaging mainstream private school parents

If Simon had been successful at Chesed, Elizabeth and Lawrence would have been proud mainstream private school parents. His success establishing their membership, they would have happily counted themselves as part of that group. Yet that was not to be. Both of them express criticism of the competitive nature of mainstream private schools and mainstream private school parents. This is an interesting contradiction in that they *are* mainstream private school parents because Elliott, Simon’s younger brother, remains at Chesed. Yet clearly, they feel estranged from the mainstream private school scene, in that they repeatedly criticized it and those parents who buy into it.

CLASS AND PARENTAL EXPECTATIONS

Before discussing the phenomenological evidence supporting Lawrence and Elizabeth’s negative emotions toward private school parents, it is important to address the intersection of class and parents’ educational expectations in our society. It is

their class-based expectations for Simon that sets the stage for their disappointment, estrangement, and anger. Elizabeth provides some direct evidence of these expectations in the previous conversation. While she feels that she did not realize her educational expectations of herself, it is clear that her standards are high. She feels that she merited a higher level of educational achievement. I would say that Elizabeth's frustrations and regrets possibly enhance the level of her expectations over what they would be had she gone to an Ivy League school. And even though she did end up going to Kaufman College, which she considers a second-rate school, she "graduated with highest honors." With this in mind, a discussion of the relationship between parental educational achievement and their expectations for their children's seems appropriate. Lee and Bowen (2006) find that parents' level of educational achievement is highly correlative with educational expectations. The more educated they are the greater their expectations for their children tend to be. In turn, higher expectations appear to correlate with higher achievement. This is true across ethnicities and classes but more so for those of higher SES (socioeconomic status) groups. Brantlinger's (2003) study of affluent professional parents within a university community and Lareau's (2003) ethnography of middle-class parents with relatively high levels of education provide illustrative examples of high educational expectations in action.

Irony, bitterness, and righteousness

Lawrence and Elizabeth's critical stance toward competitive private school parents is demonstrated several times in the conversation described above. Lawrence is the first to articulate it. He associates status seeking and disingenuousness with private school parenting. First he makes an exaggerated statement, pointing out the competitive, and status seeking nature of Boston parents. They all send their children to prestigious private schools, expecting an education that will prepare them for the best colleges in the country. He is expressing bitter irony when he states, "no family [in Boston] has any problem." He, of course, means that no Boston family with their child in a prestigious private school would ever admit that their child has the kind of academic problems that Simon has suffered. He expresses bitterness in his cartoonish characterization of urban private school parents. Turner (2002) describes bitterness as a first-order elaboration of the primary emotions anger and sadness, with anger the stronger of the two. He sees emotions as associative forces within interactions. The ability of human beings to express first-order combinations of primary emotions provides us with an expanded repertoire of emotional responses. It also allows us to avoid the dissociative effects of expressions of raw primary emotions within encounters. It is better that Lawrence expressed his bitterness with irony than openly expressing his anger toward these parents. Outbursts of anger would be inappropriate in privileged Boston society. Lawrence's anger is apparent in the force of his presentation, his determined gestures and the energy of his verbal expression. The sadness that underlies this irony can be inferred from the fact that Simon is excluded from the ranks of mainstream private school students.

Lawrence is also expressing righteousness here when he begins to talk about the courageous family that goes public with their child's learning issues. According to Turner (2002), righteousness is also a first-order elaboration of two primary emotions, in this case: anger and satisfaction, or happiness, with anger the most prominent. Lawrence's anger at the private school scene and its parent constituents is once again evidenced by the emotional energy that drives his lecture-like description of the denial of status seeking mainstream private school parents. His self-satisfaction can be divined from his allusion to his and Elizabeth's courage and honesty at having "gone public" with Simon's learning differences. His belief in the ubiquity of learning issues among the children of his acquaintances ("Ten of the twenty kids") and that he and Elizabeth are "not alone" is also a likely source of satisfaction.

Disheartened, aggrieved, and condescending

Elizabeth is also very critical of mainstream private school parents. She associates them with intolerance and exclusion. When she complains that, due to Simon's differences, she didn't "fit in anymore," she is feeling disheartened and aggrieved. According to Turner (2002), disheartened is a moderately intense variant of the primary emotion, sadness or disappointment. He describes aggrieved as a first-order elaboration of the primary emotions, disappointment and anger, with disappointment in the ascendancy. Her disheartenment is evident in her sad affect and in the way her voice trails off. In that her depiction here is retrospective, it is likely that this emotion was much stronger when events were fresh. Her anger can be seen in the way she emphasizes the words troubled, problem, and LD when she says, "when you're the one with the *troubled* kid, the *problem* kid, the *LD* kid." She apparently sees these as unjust labels applied to Simon in order to exclude her from "that circle" of competitive private school mothers.

Elizabeth also depicts mainstream private school mothers as being insensitive and tactless. She expresses this in her depiction of the fellow mother, who suggested a mainstream private high school for Simon. Even though this clueless mother had an established relationship with Elizabeth, the woman still failed to understand her and Simon's circumstances. Her snide depiction of the woman expresses condescension. Turner (2002) explains that condescension is a mix of anger and satisfaction with anger being the more pronounced element. Elizabeth's condescension is expressed in her lampooning of the woman as she heedlessly babbled on about Simon's school choices as if discussing potential restaurants for dinner. Her anger is clear from her depiction of the other mother and her satisfaction likely flows from the progress she feels that she has made in dealing with her circumstances and the distance this affords her from the moment of the encounter.

PREJUDICE

These emotions expressed by Lawrence and Elizabeth are indicative of other forces at play in Lawrence and Elizabeth's estrangement from a group (mainstream

private school parents) of which they are constituents as parents of Elliott and from which they are refugees as Simon's parents. Turner (2002), in his discussion of the importance of transactional forces in encounters, explains individuals' needs for group inclusion. Through interaction people seek to satisfy their needs for group inclusion. The greater the need and the more that need is satisfied, the stronger will be the positive emotions that result. The higher the salience of core self feelings, the stronger the need will be for group inclusion and the more intense will be emotional responses. The more salient is self and the stronger the sense of group inclusion, the more positive will be emotions felt toward self and others. Conversely, the more self is salient and the less there is a feeling of being included, the more negative will be the emotions that result. If the self is highly salient and failure to be included is attributed to others, categories of others, or corporate units, intense anger toward and fear of those to which the failure is attributed will be produced. Anger toward and fear of a categorical unit may result in prejudice toward members of that category.

The negativity and intensity of the emotions Elizabeth and Lawrence express along with their words indicate prejudice. As noted above, the energy of Lawrence's lecture-like depiction of mainstream parents' disingenuousness is indicative of a negative emotional response. Elizabeth's sad affect and the emotional timbre and the poignant softness of her voice as well as her condescending depiction of the clueless mother are evidence of strong negative emotions. The strength of their emotions indicate the salience to core self of their quest for group inclusion and the negativity of these emotions indicate feelings of exclusion and an attribution of the reasons for that exclusion to other members of their categorical unit. The combination of salience to self and the negativity of emotions contributed to their prejudiced representations. The global nature of Lawrence and Elizabeth's criticisms of mainstream private school parents is also indicative of their prejudiced conception of their fellow mainstream private school parents. Elizabeth associates "that mother group" and "[p]arents of mainstream kids" with rejection and insensitivity. Lawrence implies that most private school parents are disingenuous and status seeking when he states that "every kid goes to [an elite private school]" and that "no family has *any* problem." While Lawrence and Elizabeth's prejudiced perspective is clear, the contradiction presented by the fact of their continued membership in the categorical unit of mainstream private school parents remains an interesting conundrum to be reconciled.

DIFFERENCE, DISABILITY, AND SOCIETY

In order to contextualize Lawrence and Elizabeth's (as Simon's parents) experience of alienation and isolation from the other parents at Chesed and private school parents in general, it is important to understand our society's response to difference and disability. American society has little tolerance for difference. People whose appearances or abilities diverge from societal norms suffer many forms of oppression. Media portrayals of what society sees as disability reveal much about societal beliefs

and attitudes relative to difference. They reinforce the binary systems of normal/abnormal and able/disabled that determine individual and group status and serve as gatekeepers to inclusion. Darke (1998) explains how cinematic representations of disability use images of “abnormal” (impaired) characters to reinforce the social hegemony of normality. In what he terms the “normality drama,” normality is emphasized by the juxtaposition of non-impaired characters with a central impaired character and further highlighted by the impaired character’s rejection of his/her impaired self. Connor and Ferri (2006) support this analysis and identify its enactment in other cultural products, such as literature, television, and children’s stories. McDermott (1993) discusses the ways in which settings that make school-like demands on children with impaired school-related abilities organize the search for and location of differential performances, which result in concerted degradation of their total identity and identifies them as having LD.

TRANSFORMATION

Over the duration of this study the topic of personal transformation has emerged repeatedly. Both Lawrence and Elizabeth depict themselves as having been transformed by their experiences raising Simon. They see their transformations as having been positive and spiritually healthful. They believe that they have become wiser and more loving. They have learned how to be better parents as well as better people. The conversation described above provides evidence of this. Many would have become simply bitter, having experienced what they have, yet while they remain angry and sad as result of all they have gone through, they always return to a silver lining, an unintended benefit derived from what they describe as years of strife and pain. Here I discuss Elizabeth’s experience of personal transformation.

Embracing the competitive yet rejecting the competitive mother within

It is fitting that Elizabeth’s last statement in our last conversation of the study should focus on competitiveness. Throughout our many discussions, this theme has loomed large. Here she proudly and provocatively claims it as a basic aspect of her character, as is evidenced by her posture and her forthright expression when she says, “I’m competitive.” Her pride in her competitiveness is further supported when she says, “I have a really *huge successful* career that I’m very proud of.” Yet her statement is more complex than that. While she is brazenly celebrating her competitive self, at the same time she demonizes it as a character flaw. This rejection of the competitor within is foreshadowed by the provocative spin she puts on her declaration. It is provocative because she is daring to admit to a questionable quality. “I’m competitive,” she says yet being so made her susceptible to the dark allure “of the *mothers* in Boston *private* school competition.” So, being competitive is a basic aspect of her identity but acting competitively is not

appropriate in every situation. In her career, as a businessperson, her competitive nature is a strength that she celebrates, but, as a parent at Chesed, it is a negative quality, to be condemned.

An understanding of this apparent contradiction can be found in the work of Turner (2002). He would describe competitiveness as an aspect of Elizabeth's core self yet there is more to identity than the core self. He describes the self as functioning on three levels. First there is the core self, which he describes as thoughts and feelings about who we are, using characteristics that are transsituational. Next the self operates at the level of sub-identities, involving thoughts and feelings about one's self in different kinds of situations (i.e., family, work, education, etc.). At the third level, the self is expressed as role identities, thoughts and feelings about self in specific roles (i.e., parent, student, etc.). In business (sub identity), as a businessperson (role identity), Elizabeth's competitiveness (core self) is extremely appropriate and has been instrumental in her success but at Chesed (sub identity), as Simon's mother (role identity), she sees that competitive verve (core self) as inappropriate, even destructive. Her words and affect, as recorded above, support these conclusions. When she is responding to Lawrence's description of his encounter with the proud parents of a child going off to a prestigious private high school, she is wistfully mourning the fact that Simon could never attend such a school, at first, but then she takes stock of all the benefits she and her family have accrued from having been forced to step away from the competitive private schools scene.

Elizabeth feels that her exile from the "track" of the typical competitive Chesed mother has made her a better person, has taught her to choose love over competition, and has contributed to the richness of her family life and marriage, the quality of her parenting, and the future mental health of her children.

INVESTMENTS AND PROFITS

This chapter provides insight into Lawrence and Elizabeth's understandings of their experiences at Chesed and their LD experience as a whole. Elizabeth's ambition to prove her intelligence and to compete for dominance among the other mothers is an important feature because in some ways it shaped her experiences. The intensity of her emotional investment in fulfilling her ambitions increased her vulnerability to disappointment and other negative emotions and in the end helped facilitate her personal transformation. She was forced to make a choice between her need to compete and the needs of her family. And while her ambition, with the sadness that underlies it, remains a powerful force in her life, her commitment to her family is an enormous source of pride and fulfillment.

Lawrence's declaration of self-transformation is clear and forthright. He has "learned how to listen to [his] wife and listen to [his] children." The implication is that he, like the parents he now condemns, was at one time in denial of Simon's learning problems (interviews with professionals at Griffin provide evidence of his denial) and has since come to terms with it. This may be a source of his expressions of moral

STIGMA, LD, AND PRIVILEGED HABITUS IN AN URBAN SETTING

outrage at the failure of those parents to set aside their narrow preconceptions and needs for status for the good of their children. His ability to openly admit Simon's difficulties is a source of pride and fuel for his righteous indignation.

AFTER CHESED

In order to provide further context and some closure for the reader, I briefly summarize Lawrence and Elizabeth's narrative of Simon's schooling experience after Chesed. Simon's first year at Griffin was a "terrible, terrible" year for the whole family. Besides the deaths of the boys' nanny and two of their grandparents and Simon taking ill with mononucleosis, his extreme behaviors nearly got them kicked out of Griffin. His emotional response to his learning problems became so extreme that Lawrence and Elizabeth were regularly asked to pick him up from school in the middle of the day. His resistance to going to school and to participating when he got there was so determined that his teacher was unable to assess his performance. The school began to think of him as emotionally disturbed and therefore inappropriate for a school that specializes in LD not ED (emotional disturbance). Lawrence and Elizabeth were forced to negotiate his continued attendance. The following year, they were required to hire a full-time aide to monitor and help curb his disruptive behaviors. This intervention was a success and represents the beginning of a slow and arduous improvement in all areas. Over five years that followed, Simon's attendance and willingness to do school work slowly improved. His violent tantrums gradually became less frequent and less intense and his relationships with his peers improved incrementally. During that first year and over the years that followed, Lawrence and Elizabeth made concerted efforts to become key members of the school community. They were always available to participate in and/or even organize functions and meetings, they advocated ferociously for Simon, and they donated money and made purchases for Griffin. At the time of this research, while continuing to struggle with reading and other academic tasks, Simon has been establishing and maintaining positive relationships with his peers and will be moving on to a top shelf boarding high school for children with dyslexia. Lawrence and Elizabeth are seeing "the light at the end of the tunnel" and with Simon away five days a week, are looking forward to a much less complicated and stressful life.

MY TRANSFORMATION

As I discussed above, I began this project with a strong bias against those who enjoy class-based privilege. There were a few points during the research at which Lawrence and Elizabeth described events or expressed opinions that inflamed by classist predispositions and I experienced revulsion and some sense of satisfaction that my preconceptions were being confirmed. This left me conflicted because my overall experience during our conversations and afterwards, as I viewed and reviewed the videotapes, was one of compassion and admiration. Lawrence and

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Elizabeth are devoted parents who, in their efforts to protect and nurture Simon have experienced extreme and sustained emotional pain. Over time, my compassion eclipsed by criticality and my desire to treat them fairly, as true partners in the research, increased. This is not to say that I do not subject them and those who enjoy similar levels of privilege to appropriate critical scrutiny. It is just that my perspective of them has become more nuanced. I can see them both as agents of oppression and as oppressed. I can be critical of the ways in which their actions and dispositions contribute to the reproduction of social inequity, while at the same time, I can see them as loving parents, whose struggles to protect their family against oppressive forces has had a transformative effect on their lives.

BENEFICENCE AND AUTHENTICITY

While the research has clearly been a transformative experience for me, there is strong evidence that it has also been so for Lawrence and Elizabeth. This speaks to the ontological authenticity of this study (Guba and Lincoln 1989). The process has helped to support Lawrence and Elizabeth's evolving understanding of the experiences described in our conversations. One example of evidence that supports this claim can be found in an e-mail exchange that occurred during the writing stage of the research. I offered to send them a section of one of the chapters, hoping to get some feedback. They both responded very positively to the proposal. Lawrence replied: "We are around and interested" and Elizabeth wrote, "We would be delighted and interested to read your work." Their responses to reading the section, while very different, acknowledged the transformative effect of the process. Lawrence wrote, "It's strange for me to read about 'us' but I believe it's almost therapeutic for me." Elizabeth's response, while much more negative, acknowledged the ways in which her participation had changed her perspective. She wrote, "Unlike Lawrence, I would prefer not to read any more ... too disturbing to revisit all that old stuff, would prefer to stay in the present and focus on all the future good stuff going on with Simon." Elizabeth's use of the research as an opportunity to purge herself of the painful past and then to reorient herself toward the hopes and possibilities of the present and future is an example of both the ontological and catalytic power of the research (Guba and Lincoln 1989). The research also demonstrates what Guba and Lincoln (1989) describe as educative authenticity. Lawrence and Elizabeth's repeated efforts to use the research as a way to learn about their family speaks to this. They often expressed interest in each other's take on critical events and, in their efforts to probe Simon and Elliott's responses to and opinions about everything from celebrity scandals to the mortgage default crisis, they took every opportunity to orchestrate dinner table conversations with them.

While this report is largely descriptive of Lawrence and Elizabeth's responses to their struggles with stigma and alienation, it is also an account of the personal transformations of Lawrence, Elizabeth and me. Originally, the research sought to

simply explore certain phenomena but due to the generosity, honesty, and agential participation of Lawrence and Elizabeth, it took on generative powers for all of us.

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CAROLYNE ALI-KHAN

9. MISINFORMATION AND ITS DISCONTENTS: CRITICAL PEDAGOGY AND THE CHALLENGES OF ISLAMOPHOBIA

Abstract In this chapter I examine the ways in which Islamophobia (the fear and hatred of Islam/Muslims) has become reified since 9/11 and I discuss the implications of this for teachers and students. Using a critical pedagogical lens and the work of Paulo Freire, I question how much teachers are encouraged to unpack their assumptions about “others”, think about hierarchies, and question the ways that structural inequity is continually normalized and reproduced. Taking a cultural studies approach (examining both formal and informal educational spaces/texts) I present for analysis both theoretical arguments and personal anecdotes (as one of “them”, the “other”). My intention in this chapter is to push back against both Islamophobia and the wider logic of instrumental rationality.

PUSHING THE CONTACT ZONE

My name is Khan, and I am not a terrorist. (My name is Khan 2010)

It is to be expected that the trailer for the Bollywood movie *My name is Khan* would offer viewers that one single English language line. In the United States in 2010 it is perfectly reasonable to assume that a middle-eastern looking man with a name like “Khan” might well in fact be a terrorist. The stereotype of “Muslim/Arab/Person from the East = terrorist” has become a cliché. As an educator and person of Muslim heritage, I should not perhaps be as surprised as I am. But I was not prepared for quite this relentless onslaught of media supported racism. Nor was I prepared for it to be so unchallenged. Dissenting voices seem all too few. I am continually struck by how much this contemporary political moment in the West *still* continues to encapsulate a post 9/11 turn, despite almost ten years passing since the Twin Towers fell, and despite the unpopularity of the war against Iraq. There has been an infusion of “Islamophobia” into our cultural landscape. Islamophobia is the fear and hatred of Islam/Muslims/Anyone perceived as being from “The East.” It is a strange term that twins fear with religion. This is a frightening moment in history, one in which neoliberal efficiency-oriented agendas and unbridled racism dominates our media and infuses all of our public institutions. I, for one, am frightened by the way that the curriculum and agenda of an Islamophobic media has seeped into schools. Through considering the frameworks in which Muslims are and can be perceived, I am searching for spaces and instances of resistance.

As a K-12 educator I know that we do not often like to acknowledge, much less address, (less than obvious instances of) racism in our classrooms. This is not indifference; there is simply so much to worry about already. As teachers we want to be able to close our doors and engage in understanding the topic at hand (unfettered by broader social concerns). Like my colleagues I would like to think of *my* classroom as a space of sanctuary, removed from the world and under my watchful control. Yet classroom spaces are not isolated from the world, they *always* incorporate broader power struggles. Classroom lessons and interactions reinforce dominant patterns of privilege, legitimating some knowledges and erasing others, while reflecting who possesses power in the broader world and who does not (Kincheloe 2005). In opposition to the idea of classrooms as sanctuaries, an alternate conception might incorporate the notion of classrooms as “contact zones.” Linguist and critical theorist Mary Louise Pratt defines “contact zones” as, “social spaces where disparate cultures meet, clash, and grapple with each other, often in highly asymmetrical relations of domination and subordination” (1992, p. 4). To think about classrooms this way is to think about formal education as being in dialectic interplay with the broader world.

The critical pedagogue Paulo Freire has led the way in addressing connections between education and broader worlds with the aim of finding places of resistance to hegemony. He argues for the importance of what has been called “reading the word and the world” (Freire 1987). This idea encompasses the notion of education as a political endeavor that is focused not simply on formal and literary knowledge (*reading the word*) but also on knowledge that can assist the struggle to change oppressive social structures (*reading the world*). *To know* and *to educate* from this framework means to provide students with the skills to deconstruct ideologies and to analyze the way that power works to perpetuate privilege. Through this lens classrooms are not neutral spaces for coexistence, and to engage in “reading the word and the world” is the first step in challenging injustices. Inherent to this worldview is the belief that the creation of empathy and agency are the true goals of education and that these goals are always within reach. According to Freire, as we read the world we become aware of injustice, as we become aware we empower ourselves to challenge and change the world. As we engage in these understandings and actions we also change ourselves. He notes, “I make myself with others” (Freire 1998, p. 72). In this theoretical paradigm, ontology (being) is connected to axiology (decisions about what and whom we value) as well as to epistemology (beliefs about what we know and can know). With this theoretical framework in mind, in what follows, I contrast and intertwine personal narrative, the experiences of others, and an analysis of textual representations of Muslims/Islam in order to highlight a mass of misinformation about Muslims that is seeping into classrooms. I attempt to read the word and the world in order to understand how “Khan” and “terrorist” came to be synonyms. I begin with a brief examination of the importance of theory for reading the word and the world.

THEORY, METHOD, RATIONALE AND PIGS

I'm living in an age. Still turning in the night. But when I get to the doorway.
There's no one in sight. (Peter Gabriel 2010.)

Pedagogy in an instrumental age

Acknowledging that education does not occur outside of social, cultural and historical contexts, I turn briefly to some of the labels of our contemporary era that are important to thinking about the broader pedagogical frameworks through which Muslims are perceived. The first decade of the twenty-first century has been ushered in by wars that have been designated as being between “Muslims versus Christians” or “East versus West.” For those who ascribe to this idea, we are living in a time of what Samuel Huntington (1993) has designated as an era of “clashing civilizations.” Peter McLaren and Nathalia Jaramillo (2007) argue instead that we are living in the age of the global bully. According to them in this “Age of Empire” cultural pedagogical practices are employed to maintain large, divisive, and conquering political and economic power hierarchies. From a different angle, this era is also often referred to as “postmodernity,” which is a designation that involves the recognition of this being a time that is filled with competing vantage points and contested power and knowledge positions. In addition this time is also considered to be the “Age of Instrumentalism” as instrumental rationality in education is alive and well. Through the logic of instrumental rationality, facts and knowledge have a use value that is specific, local, personal and unconnected to broader social questions. As I see it these ideological paradigms combine to bring us to a frightening place, one in which we are told to accept the inevitability of cultural conflict between East and West, but in viewing all knowledge as nothing more than a commodity for personal gain we are unable to use what we know to effect real social change. It is additionally worrying to me that operating within institutional machines as educators we are discouraged from giving these labels much thought, yet they shape the paradigmatic and ideological maze that influences what we can know (our epistemologies) and what we value (our axiologies). They are the waters in which we swim.

Joe Kincheloe and Ken Tobin note that “positivism” is alive and well, as educators are still enslaved to the production of behavioral and theoretical truths, (Kincheloe and Tobin 2009). Positivism asserts that the world is simple, uncontested, fully knowable, and able to be contained in simple right or wrong answers. Recent confirmation of positivism’s robust existence comes from The New York Times Sunday Magazine which featured a cover article smugly entitled, “Building a better teacher” (Green 2010). The article was accompanied by an illustration of a superhero-teacher in an action-figure pose. Its main assertion was that good teaching could be boiled down to nothing more than a series of bite-sized moves. I imagine edupreneurs everywhere (who make their living from selling educational produces and services) are cheering. The article assured its readers that these bite-sized great

teacher moves can be learned (for a modest fee of course), and the hero of the article, Doug Lemov, is the man to sell us the magic formula.

One of the many things disturbing about the article was the focus on *method* (of mechanical teacher building) along with a flagrant attack on *theory* as of little use in classrooms or in teacher “training.” This type of focus on instrumentality bypasses “why to” for “how to” and by doing so sidesteps the necessity to address the role of teaching and teachers in broader ideological, paradigmatic (and by extension physical) wars. It is important to explain this to pre-service teachers. Theory can seem secondary and ethereal to a new teacher who is struggling to make lessons “work” the way they want them to. Yet a focus on method (and technical rationality) is dangerous for teachers and students. It works in opposition to thinking about pedagogy as “the space that provides a moral and political referent for understanding how what we do in the classroom is linked to wider social, political and economic forces” (Giroux 2007, p. 3). By adhering to a method-only logic, educators risk becoming slaves of an efficiency-oriented paradigm in which broader questions of purpose are held as beyond their ken. At the altar of accountability and efficiency we may forget that some of the most oppressive regimes on earth have been highly efficient. In contrast, Christina Siry (2009) argues that there is and must be an inseparability of theory and practice in education. If we are not to be pawns in the regime of teacher training and efficient methods of “how-to,” then we need to make decisions about where we stand vis-à-vis theoretical paradigms. Do we believe that we live in an Age of Empire? If so what do we believe our role should be? Do we embrace the idea of honoring a multiplicity of standpoints in a postmodern moment? How might this happen? Do we question the idea of East versus West and think about how this might influence our classroom praxis? It is with questions such as these in mind that I return to the topic of Islamophobia.

A thirsting

In *Teaching to Transgress*, bell hooks exclaims that she came to the work of Paulo Freire at a time when she was “unsure of how to break the hold of the status quo” and in her longing to do so she was “needy” and “dying of thirst” (1994, p. 50). As teachers and students, we often find our paths fogged with dull or untrue factoids and our screens slathered with salacious tidbits of proof about “them” – with “them” being the irrational Arab/Muslim/Eastern/Black/Female/Latino/Gay Other¹. When this happens, it is increasingly difficult to know what to do to break the hold of the status quo. My experiences working with pre-service teachers echo those of hooks and of Kincheloe who states, “most of the students I talked to ... have a basic sense of the values of freedom, justice, and equality. They want to be fair in their dealings with other people in the world. What they often don’t have is the experience in connecting their personal values to the public sphere” (Kincheloe 2001, p. 12). Christopher Stonebanks (2004) brings this concern to teaching about diversity and Muslims. He observes from his work with teachers, that we all wish to imagine

ourselves as heroes who would have fought against racial injustice, a desire that dovetails nicely with popular movies that show the-justice-oriented-white-rebel-on-the-side-of-the-natives. But the reality of Islamophobia, and of the world in general, “is that very, very few of us ever have the foresight or the courage to take even the most basic of stands” (p. 100). It appears that we are unsure of how to proceed.

Like Freire, Kincheloe, and hooks, I believe that the answers of how to proceed come from critical pedagogy. Critical pedagogy is a theoretical standpoint with a lust for the practical, it requires educators and cultural workers to engage in the struggle to discern and express the ways that the machinations of power reverberate through all pedagogical acts. One of the most urgent goals in this paradigm is the uncovering of the structural inequity that schooling in misinformation can inculcate, reproduce and normalize. Bringing this to the problem of Islamophobia, the task of the critical pedagogue is to expose the hidden curriculum of power, hierarchy and oppression that is infused in the way the “Muslim Other” is defined in both formal and informal educational spaces. This theoretical stance pushes us to ask how pedagogy (both in and outside of the classroom) connects to the ideas that we (individually and collectively) form about others, and how this impacts our ability to act in relation to those others. From this standpoint we ask, where do we get our ideas about those who are different from us? What surprises us and why are we surprised? How do we make sense of knowledge that contradicts hegemonic or dominant representations?

Interpreting the presence of pigs

Hegemony has no place for the contradictions and complexities of real people. Real people negotiate identities and relationships, both with individuals and with structures (such as religion), in ways that defy stereotypes. One example of this was my Muslim father who, contrary to hegemonic Western notions about Muslims and their behaviors, loved pork. Sharing this with students I have literally been told that this made my father *not a real Muslim*. Would we think to say this about members of other religions? My father was a Pakistani and a great storyteller, and not untraditionally, these went hand in hand. I spent my childhood on his knee, listening to his rich tales of growing up in what I understood as the magical East. Each story was infused with a lesson: “So you see, Jaun” (“my dearest” in Urdu, the language of Pakistan) he would say, “in the Qur’an, God says to us...” All of his tales to me were about learning respect, love, tolerance, humility, and kindness. Each story contained a moral about striving toward being a compassionate and passionate being. “This is Islam,” he would tell me, “similar teachings are also at the core of Christianity and Judaism. This you must respect.” From him, and from spending one third of my life in Muslim countries, I have been exposed to a lived Islam, to both the letter and the spirit of the religion as it is interpreted and infused in the everyday. Living in Pakistan, Egypt and Jordan, I have been immersed in worlds of Muslims that are not the caricatures of US textbooks and media, of people (individuals and collectives) who are striving to live lives that are kind, and who are concerned with living in ways that do not contradict

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the lessons of peace that are taught in their religion. They are neither fanatical nor irrational, but rather idiosyncratic and nuanced, and their interpretations of identity and religion are simply not uniform (a point I will return to).

Next up: A peering differently

What follows is a critique of the representation of “Muslim” as it appears in a variety of formal texts, intertwined (sometimes contrasting, at other moments in alignment) with anecdotes. It is important to point out that my use here of the particular (that is the personal, local, narrative, anecdotal) is not intended as a basis from which to universalize or generalize (in other words to essentialize). My intention through these stories is to bring instances of Islamophobia and moments from the lives of real Muslims to life (through the use of examples). I am not looking for a Geertzian thick coherence. But rather by using phenomenology I seek to pull the reader into what it can *feel* like to *be* of Muslim heritage and to be perceived as “one of *them*” (the big bad Other). I present these particular narratives and perspectives in attempt to engage you as a reader in subaltern knowledge. Subaltern experiences are commonly understood as presenting a view from the bottom, one that contests the dominant narrative, thereby implicitly both humanizes discourses and calls for accountability.

In working to contest dominant narratives, some questions that educators might consider include, how can Muslims appear differently to our students? How can we peer differently at the knowledge we have of them? Why does it matter in the course of a normal school day? To add to the arguments I have already stated I suggest that it matters to individuals who have been harmed by racism and to communities as a whole. Hilde Lindemann Nelson (2001) notes that, “A person’s identity is damaged when a powerful social group views the members of her own, less powerful group as unworthy of full moral respect” and consequentially denies the member of the group equal opportunity and agency (p. xii). If Muslims do not matter then potentially no one can matter. We simply cannot afford to close our classroom doors and ignore this (or any) racism. On a structural level, to allow Muslims to be crafted as “less than” is to justify the discriminatory practices against them and ultimately it is to condone the wars that the U.S. wages on (currently three) predominantly Muslim countries. On another level how we think about Muslims matters because the messages we send about any particular group are wrapped up in the messages we send about what it means to be a human being in the world with others.

Misinformation and its discontents

“Yo Miss! Pakistan? You serious? You from Pakistan? Don’t you be scared to go there? Do your family carry guns?” (NYC High School Student, 2010).

“Honestly, when I have to sit next to someone on the subway with their head covered, like you know a Muslim, Arab, um, one of them, it makes me nervous.” (NYC pre-service teacher, 2009).

As a teacher, I weave stories about my father and anecdotes from my years and experiences in the Muslim world into my lessons. Invariably they are met with surprise. My anecdotes and my truths do not fit with the Islam/Muslim of the US news media and the institutional teaching machines. When I ask my students at the high school and college level what they know about Islam/Muslims, I am met with either a silence, or with the admission that they have learned only (and indirectly, incidentally) to be fearful. When I tell them that my family *voluntarily* lives in Pakistan and I travel back and forth to see them I am met with the disbelief of, “*Could you really be one of them? You seem so normal!*” I am indeed hardly much of a threat. At 5’2, I am small-framed and fond of being silly (even in my role as a teacher). There is a cognitive dissonance that occurs when my students try to make sense of this (normal) woman in the framework of “Muslim = Terrorist.”

I teach in New York City, a cosmopolitan ethnic mish-mash where residents daily ride the subways shoulder-to-shoulder with a large and diverse populace. It would be reasonable to expect that the negative stereotypes of Muslims would have little currency in this terrain. After all, there are about 600,000 Muslim New Yorkers. In this densely populated expanse my urban compatriots and I are exposed to people from Indonesia, Mali, Iran, Lebanon and residents from any number of the forty-odd predominantly Muslim countries. New York is a city of religious diversity and one that prides itself on tolerance. Given this one would expect that the narrative of “Muslim = Arab = Terrorist” would not take hold. Yet it did. The recent (2010) furor over the “Ground Zero Mosque” attests to the levels of intolerance and ignorance about Muslims (even in this cosmopolitan city).

CULTURAL AND MEDIA STUDIES

How can I make sense of this racism? One theoretical light comes from cultural studies. Scholars of cultural studies argue that in a twenty-first century America (the land of edutainment) it is the media that largely shapes our individual and collective consciousness. Neil Postman (1986) argues that America’s love affair with television works to truncate public debate and stifle rational discourse. Douglas Kellner looks at media as a cultural artifact to conclude that it “helps shape people’s view of the world and deepest values” (2009, p. 5). Shirley Steinberg (2007) argues that it is important that we do not read the power of media as innocent. *As we consume media, we also emotionally invest in its messages*. In an ontological sense, these theorists are pointing out that *what informs us becomes us* (in the way that we assimilate it, adapt it or in fewer cases, resist it). Media is a tool for hegemony. Tobin clarifies a definition of hegemony as including the idea that, “the disadvantaged accept their relative disadvantage as normal” (Tobin 2008, p. 171). What then is the role of schools vis-à-vis Islamophobia? According to Kincheloe, in the age of media-filled lives school must become “less of an institution of information delivery and more a hermeneutical site – a place where meaning is made, understanding and interpretation are engendered” (Kincheloe 2004, p. 32). Our job as educators engaged in reading

the word and the world, is to envision the classroom as a place for making meaning (as opposed to a place for knowledge transmission) and to operate as guides who can help our students navigate the mis/information that is all around them.

The US media is full of misinformation about Muslims. It has little good to say about Muslims and Islam. *Media Tenor* is a reputed *International Media Content Analysis Institute*, their most recent study on media image in Islam (October 2008) found that, “Even seven years after the attacks on the World Trade Centre media coverage has not changed at all: Religion is primarily associated with terrorism. Almost half of all statements about Islam have been negative in the American ABC, CBS and NBC network news.” Erin Steuter and Deborah Wills concur, in their edited volume, *At war with metaphor: Media, propaganda and racism in the war on terror* (Steuter and Wills 2009) they illustrate how the Muslim-as-terrorist motif has dominated all media portrayals including (but not limited to) film, political cartoons and talk-radio. As teachers struggle with how to understand and navigate media that presents right wing sentiments some educators argue for “equal time” in classrooms. The assumption behind “equal time” is that *free speech = democracy*. Though appealing, this logic is deeply and dangerously flawed. Özlem Sensoy crystallizes the issue, in her comments about popular right wing extremist Ann Coulter,

What people who launch the charge of “free speech” (and other charges such as “anti-democratic,” “censorship,” and “lighten up it’s just entertainment”) fail to acknowledge and understand is the social concept of power. Sexism, racism, ableism, heterosexism, classism, anti-semitism, are not about individual acts of discrimination (what some conservative commentator may have specifically said to offend someone or some group). These terms do not primarily refer to acts of discrimination (expressions of prejudices like Coulter’s). They refer to systems of privilege that “normalize” a particular way of talking about and thinking about particular groups of people in society. (Vancouver Sun, March 24, 2010)

Selcuk Sirin and Michelle Fine (2008) note that post 9/11, “American-Muslims” quickly became “Muslim-Americans,” thrust suddenly into a world of Coulteresque “toxic social representations” (p. 11). The normalized way of referring to Muslims in the media fits into a system of privilege that works against them, as it emphasizes stereotypes, reinforces fear, and positions the powerful on top.

Research polls

Affirming the truth of “toxic social representations,” research from the Council of American Islamic Relations (CAIR) asserts that for the most part Americans have learned either nothing or only negative things about Islam and Muslims (2006). A 2006 Gallop Poll confirms, “Substantial minorities of Americans admit to having negative feelings or prejudices against people of the Muslim faith” (Saad 2006). A Gallup poll in 2010 revealed that, “43% of Americans admit to feeling some

prejudice toward followers of Islam” (Gallup Center for Muslim Studies). The Pew Research Center (2009) asserts that the majority of Americans see Muslims as facing more discrimination than any cultural or ethnic group except gays and lesbians.

In the recent book, *Who Speaks for Islam?* John Esposito and Dahlia Mogahed, (2008) turn stories into numbers. As a product of the widely respected Gallup World Poll’s “massive, multiyear research study” the book has received considerable accolades from the press and wide exposure in popular culture. The research claims to represent 1.3 billion Muslims. The Gallup website proudly touts that the book lists, “Counterintuitive Discoveries” and surprising insights about Muslims. First among them: “When asked to describe their dreams for the future, Muslims don’t mention fighting in a *jihad*, but rather getting a better job.” Really?! I am stunned to sarcasm. I find it deeply disturbing that the idea that strapping explosives to one’s chest on a suicide mission (presumably what they mean here) isn’t most Muslims’ idea of “a dream job” and is considered worthy of being touted as a “Counterintuitive Discovery.” A separate publication of the Gallup Poll entitled *Special Report: Muslim World* (2006) made the claim of “countering conventional wisdom” as this research discovered that people in “Muslim countries as well as the United States report experiencing enjoyment, smiling and laughing, and enjoying good-tasting food.” One is forced to ask what “conventional wisdom” might argue back?

Boy films and girl novels

Gallup and other polls rely on number driven data, but a wealth of mis/information can also be transmitted through other senses. David MacDougal, analyzing the body in film, argues that, “representations of experience immediately create new experiences in their own right” (MacDougal 2006, p. 16). Any educator that has used film (particularly Hollywood) in the classroom knows how powerful film can be, and how easily it seems to become truth to students. This seems particularly important with regard to forming ideas about the behaviors of culturally different others. “I saw it in the movie” for students I have encountered often equals, “I have emotionally felt this as truth and so I believe it is real.” Brian Johnson and Skyra Blanchard (2008) claim that film is the dominant cultural shaper of our ideas about others and so the use of film is an imperative for the classroom. With this in mind, I question who speaks for “the East” in movies? Jack Shaheen’s film and book, *Reel bad Arabs: How Hollywood vilifies a people* (Shaheen 2001) offers an analysis of over 900 films from 20 years. Shaheen convincingly argues that Arabs have consistently been cast as the barbaric and evil “other” in Hollywood films. Shirley Steinberg (2004) picks up this analysis with her similar findings on the continued vilification of Muslims and Arabs. Stonebanks (2008) deconstructs the racist typing of Persians in the hugely popular film *300*. What these scholars all note is that over and over again film audiences are “shown” Muslims who are less than human and more than violent. My students find it difficult to believe me when I try to argue that this is not in fact an accurate representation.

While the portrayal of Muslims in film is predominantly of men (blowing things up, hungering after white women etc), the literary portrayal in popular novel about women in the Muslim world focuses predominantly on the “plight” of women. These women universally are portrayed as suffering at the hands of men, and/or held down by their “oppressive” religion. The stereotyping of Muslims is often deeply gendered, with representations of Muslim women offered as a counterbalance to the men, but only insofar as they are now victims rather than victimizers. Susan Smith (2007) examines the work of the Islamic scholars Keisha Ali and Amina McCloud, who document how popular memoirs and fiction “reinforce rather than expand Western expectations about women” (¶ 5). Sensoy and Elizabeth Marshall (2009) ask the question: “Does popular young adult fiction about Muslim girls build understanding or reinforce stereotypes about them?” Their findings affirm that this literature universally presents Muslim girls as veiled, nameless, silent, oppressed and in need of saving by the West. Sociologists Monica Casper and Lisa Moore argue that representations of bodies work “to create social order as we know it” (Casper and Moore 2009, p. 4). Through this lens the popularity of tales of oppressed Muslim women makes sense, as the social order of Western superiority is predicated on assumptions of the inferior position of non-Western (particularly Muslim) women.

A veiled Muslim friend of mine likes to wear a T-shirt with a picture of a woman in a headscarf, it states, “I cover my hair not my mind.” She wears it proudly. Religiosity is her choice. Muslim journalists, scholars, activists, and novelists who present evidence and stories that work against the notion of the oppressed Muslim woman to offer stories of women who make their own lives and choices are conspicuously absent from popular renderings. As a corollary, Western problems with the treatment of women are never referenced. The assumption is made that Eastern women suffer while Western women have their rights and bodies legally and socially protected. Meanwhile the Eastern women who have risen to political (often Presidential) power are ignored as anomalies. Educated, entrepreneurial, outspoken or even simply joyful or cared for women are not included in the stories told about them in the West.

To bring this to my local focus for a moment: The complex novels of Pakistani writer Sorayya Khan are much less popular than the tales of oppressed girls. Muneeza Shamsie’s collection of contemporary Pakistani women writers (2005) is hardly given mention in Western press. The powerful and eloquent collection of Pakistani-American scholar Fawzia Afzal-Khan’s, *Shattering the stereotypes: Muslim women speak out* (Afzal-Khan 2005) doesn’t whet the sensationalist palate and this work has received little recognition. The common denominator of the women in these books is that they are not devoid of complexity or intelligence. Nor are they (as a given) visibly “the Other.” They certainly are not oppressed in ways that the West likes to frame Muslim women. My own family and friends include many smart, sassy, accomplished Muslim women who cover their hair in one form or another; and many who do not. As I think about the dominant Western discourses on Muslim

women I am reminded of my religious catholic German grandmother who would not have thought to wear shorts to church, and although not a strict parallel, I find it ironic that no one would have called her oppressed.

DIGGING IN THE DIRT

Most social studies textbooks are unchecked for intellectual quality or accuracy. When we examine the list of priorities for textbook publishing companies, an accurate portrayal of the world is near the bottom (Kincheloe 2001, p. 60)

An accurate portrayal of Muslims is no more likely in school curriculum materials than it is in popular culture. Tobin (2009) warns us to be careful of the neoliberal tendency to quickly fault public schooling, and his caution should certainly be well heeded. Yet an abundance of bias can quickly be found in many educational resources for teachers. My New York high school textbooks not only show Muslims in biased and simplistic ways but also are guilty of blatant propagandizing. In addition teacher resources that reinforce stereotypes and demonize Muslim countries as a threat to American freedom and democracy are widely and freely available for classroom use. These range from websites (linked from educational sites) that show aggressive militaristic fictions (like showing Pakistan starting World War III), to museums that proclaim tolerance while supporting the notion that “They hate Us,” to simple good old-fashioned lies (Ali-Khan 2010).

None of this is new. Fitting Islamophobia into a historical framework, current representations of Muslims fit with the tales that have been consistently told about them. Leila Villaverde, Frances Heylar and Kincheloe (2006) caution us not to forget that history needs to be read with a critical eye, as it is “mediated by philosophy, ideology, and politics” (p. 311). Exposing ideology and politics in history, Edward Said’s (1978) observations on “Orientalism” are still relevant. Said claimed that the meaning attributed to those from the East has been flattened to fit the binary of an uncivilized “Other” against whom the rational West can be measured. Kincheloe notes that currently “postmodern Orientalism” passes along the same demonizing messages that Said noted, only now these messages are transmitted through the new technological mediums of the 21st century (Kincheloe 2004, p.10). Postcolonial scholars argue that this technologically diverse age has brought with it a multiplicity of new ways that the long held binary of “Good West/Bad East” can continue to function as the dominant narrative.

In addition to the weight of Orientalist perspectives, much United States history suffers from a selective amnesia with regard to the treatment of minorities and immigrants. Anne Bakalian and Mehdi Bozorgmehr (2009) mine U.S. history with an eye to understanding current discriminatory policies and practices. These scholars have guided my realization that despite our American textbook penchant for happy historiography, a deeper look reveals that historically the U.S. has not behaved well, (Ali-Khan 2010). The current attack on Middle Eastern and South Asian Immigrants

who are detained, interrogated, deported and deprived of normal legal recourse is less surprising when it is viewed in the light of the treatment of Japanese Americans in internment camps in WWII, Germans forced to assimilate, American Communists who were “deported” in the 1950s, and Iranians deported during the hostage crisis of the 1970s, and the treatment of Native and African Americans (Bakalian and Bozorgmehr 2009). Once they become aware of this historical backdrop, teachers can help students understand how the current negative stereotyping of Muslims fits with history.

Embodying an ideology, or not

In a famous scene from William Shakespeare’s *The Merchant of Venice*, Shylock, a Jew, proclaims that he is “fed with the same food, hurt with the same weapons, subject to the same diseases...as a Christian” (Act III, scene 1). Pleading with the courts he argues for acceptance into the category of human. Not everyone apparently belongs. The current trend of Islamophobia presents Muslims as not fully belonging to human. Proof of this abounds in images and stories where Muslims are portrayed as vehicles for zealotry and reduced to being emblems, nothing more than embodied sites of ideology. They do not live in days; they live in vitriol! They are not sensual, not trivial, and not humorous, they are unconnected to whims of the flesh. Muslims in these narratives are not complex (or fully human) enough for the ruminations of a life well lived and well thought out.

In contradiction to these portrayals, “Muslims” do not have one single agreed upon way of being. Here are some examples of diversity in the Muslim world: The Sufis, who are the mystics of Islam, celebrate Allah with ecstatic outpourings of music and sensuality; the Saudis do not. The estimated 10–15 million Muslim Alevis do not go to mosques, they don’t pray five times a day, and they celebrate religious occasions with expressive and communal practices that do not fit with conservative conceptions of Islam. Most of my Muslim friends and family, in both the East and in the West, drink alcohol, some like bacon for breakfast. They may not be the majority “face of Islam” but these Muslims are also proud of a religious identity (despite their habit of Merlot wine). Neither are they interested in converting anyone. They are tolerant, sane people who negotiate their relationship with God, religion, and people of other faiths, in tolerant and sane ways. The point I wish to make here is that scattered around the Muslim, (Christian and Jewish) worlds are communities of zealots for whom God is an intolerant fundamentalist, but just next door (and out of the spotlight) are communities of ordinary people heartily wishing to disassociate themselves from the former. This is not to claim that concerns about Muslims who have lost control of their communities to Islamic radicalization is not valid, but it is important to note that this radicalization of any population is invariably connected to broader global/local political and economic forces. The extremist Muslim community is not the world the typical Muslim navigates daily, nor is it representative of the Muslim world. “The Muslim world” is not a specific local place, it is home to over a

billion people stretching from Turkey to Indonesia and Africa, and it encompasses an enormous variation of geographical, political, cultural, ethnic and religious diversity. If we are to work toward real understanding, and free the film protagonist Khan from his terrorist inscription then it is important that we teach students in the West about stereotypes and about diversity in the Muslim world.

THE PRICE OF (DOING) NOTHING

Not one of these bloody people (a small story)

It is difficult not to succumb to the feeling that there is simply nothing to be done. Stonebanks speaks of being half Iranian and happily married for thirteen years to a “White lecturer in education” who, “if you ask her to close her eyes and tell you what plays out in her mind if you say the word ‘Iran,’ she will say something akin to ‘angry, chanting, violent men in a threatening mob’” (Stonebanks 2008, p. 208). His story resonates with mine: When my parents and I moved from England to Pakistan, my teenage attempts to assimilate in Pakistan were met by my Pakistani-British-naturalized father with a firm, no, “Never forget that *you* are *not* one of these bloody people,” were his words to me. It was many years before I understood the connection between the pain that he suffered, and would suffer again as “one of these bloody people” in the United Kingdom, and his attempts to protect me from the racism he encountered. But as a child his response angered and confused me. As near as I could tell I *was* in fact, one of “those bloody people” and my experiences with racism confirmed it.

I wish that I had found a way to ask my father of the path that led him to his conception of his own identity, about his reasons for distancing himself from our ethnicity and about the ways in which the ideas and actions of others can influence the perceptions we might have of our communities and ourselves. Post- and neo-colonial scholarship posits that colonized or minority individuals often internalize the negative perceptions of them that are transmitted through the dominant culture (Nelson 2001). Racist craftings of identity can seep deep into our psyche in ways that defy logic. From my experiences with being “one of them” I learned that although assimilationist impulses make sense (as those who “pass” as belonging to the dominant ethnicity will probably not experience racism), they might not work (and those in power may not accept the minority individual who tries to assimilate). In addition, attempts to “pass” and to escape the negative portrayals that infuse our days and seep into all of our understandings may create deep psychological discomfort.

Not thriving (multiple stories)

According to research from the recent report *Muslim Americans: A national portrait* (Gallup and The Coexist Foundation 2009) “When asked to evaluate their lives, young Muslim Americans (40%) are the least likely group of young respondents to be classified as ‘thriving.’” Putting a face on the recent experiences of young

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Muslims the research of Sirin and Fine (2008) describes the struggles of Muslim-American youth. The stories they bring forth are typical of the research about Muslim youth in America. These young people in a post 9/11 world have found themselves in internal exile, forced to weather “growing up in the shadow of moral exclusion” (pp. 1–24). The young Muslim voices in this book describe the stress of being under surveillance, taunted, viewed suspiciously, and subject to low expectations. The voices in *Muslim Americans* and similar research bring forth the lived experiences of the many young people for whom Islamophobia is a daily event. I have similar personal experiences within schools (Ali-Khan 2009). As a child in a British school who was perceived as “them” I found myself on the receiving end of the racist monolithic stamp. I embodied “the other,” and as such, the “normal” kids assigned my identity to me. I knew little about Pakistan, but I knew I was seen and understood as a “smelly,” “dirty,” “Paki,” “stupid,” “Nigger” who needed to “get out” and “go home!” Although I never did quite figure out where home was supposed to be.

Crimes and bloodshed (countless untold stories)

The struggle of minorities for fair and accurate representation is often dismissed as identity politics. However, the ramifications of racism go far beyond whether or not students to “play nice” in schools. Hate crimes are at the extreme end of not playing nice with others. Mac Ginty (2001) argues that hate crimes are not crimes against individuals alone, rather as they are intended to send messages to communities, they exist as a mechanism of social power. Linda Martin Alcoff (2006) historicizes this as she argues that the struggles of social identity have been, “both the crux of oppression and the nodal point of the imperialist project” (p. 285). The tendrils of Islamophobia extend well into the imperialist project, as the wars (arguably hate crimes writ large) in Iraq, Afghanistan and in effect Pakistan continue. So far there are probably well over 1½ million people dead² from what is still commonly known as “the war on terror.” Tellingly it is impossible to know the exact numbers. Contained within the rhetoric of collateral damage is the unsettling truth that some bodies are just not worth counting.

ASKING

Mark Zuss offers us the cautionary insight that “(the) vitriolic racial and ethnic essentialism appearing throughout the world are stark examples of uncontrolled authoritarianism” (Zuss 1999, p. 14). Working from the idea of classrooms as contact zones I believe that it is worth asking questions in classrooms about authorship, authority and authoritarianism as we seek out counter-stories and engage in challenging texts that teach us about the “Other” in ways that are damaging. To the list of questions that you may have, I add: How has “Eastern/Muslim” been produced by the dominant culture? What has this definition encompassed? What has been left out of the narrative? What does this story look like in schools? Who

has benefitted from this telling? Who has been harmed? How does this story fit with the stories of other minorities? Why might it be important to find ways to ask these questions with our students?

As the cultural turn of Islamophobia has become widespread and multilayered, like other prejudice it has insidiously seeped into the normal. We would not be shocked if “Khan” were a terrorist; we have been prepared for this. I believe that it is critical to recognize that classrooms are likely to be the only places that might challenge “the Big Bad Muslim” in a cultural landscape that is infused with Islamophobia. If, as educators, we do not engage in both reading the word and the world and in confronting dominant representations, then the ubiquitous negative messages about Muslims in both formal and informal cultural spaces become the only “truth” out there. And the possibility of a just and equitable world for us all quietly erodes.

NOTES

- ¹ This notion of “Other” could be anyone at all who is other to us – black, female, poor, young, old, gay, etc., but that this chapter is specifically about Islamophobia and so I frame Other in this way.
- ² The numbers quoted are estimated from Iraqi deaths estimator (2010) and Iraqi body count (2010) added to the number of Afghani death estimates from CNN (2009). Eliza Szabo comments on the lack of information about deaths from these wars (July 20, 2007).

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LINE A. SAINT-HILAIRE

10. ENACTMENT OF CHEMISTRY KNOWLEDGE BY A HIGH SCHOOL STUDENT AT A SUMMER PROGRAM

Abstract In this chapter, I attempt to evaluate the acquisition of knowledge by a Latina female student (Kelly) participating in a five-week intensive chemistry program. The analysis of her answers on the Chemistry Regents mock exams demonstrated a pattern of misconceptions on specific topics that contradicted her Chemistry enactment in the different social fields, the lab, the class, and the tutoring sessions. From these analyses, I recognized a behavioral characteristic of the student in these fields. The analysis of the videotapes helped to identify how Kelly established a caring attitude for her peers in the lectures, laboratory periods and tutoring sessions while showing a very good understanding of chemistry. But when she took the tests the answers to questions did not reflect the same level of understanding showed in the previously mentioned fields. I attribute this difference to the caring role she was able to play in the first three fields. This role is known in the literature as “Othermothering.” Contrary to what is known, the role of Othermother of young girls in academic settings can be favorable in enacting their scientific knowledge. Specifically, in this chapter, I demonstrate how Kelly was able to use such a role to assist her peers to be efficient in the Chemistry Summer Program.

An Othermother can be defined as a woman other than the biological parent who fills the role of a mother, or grandmother (Gibson 2002). The role of Othermother is traced by Randall Collins (1990) back to slavery times when elderly women and adult girls were expected to take care of young children and babies while their slave mothers were working on the plantation or accomplishing other tasks. It was used as a survival resource that served to educate children about their origin. This practice has become a ritual among colored females in particular. The notion of Othermothering could be connected with a universalized ethic of care, in which Othermothers within a commune display a sense of conscientiousness to the children of other mothers (Case 1997). Every female (grandmother, sister, aunt, or cousin) shares the responsibility of child rearing by adopting the role of Othermother. In a study conducted by Carol Gilligan and Amy Sullivan with twenty-six girls from poor and working-class Hispanic, Caribbean and African American youth attending

Boston public schools, 85% of them mentioned having an adult woman as a mentor in their lives that plays the role of Othermother (Daigneault 1998). As the girls started high school, their experiences with Othermothers represented a positive referral point in strengthening their self-esteem.

In school settings, Othermothering practices are reproduced in the classroom when girls attempt to help peers who have been absent to catch up on the topics they missed. In contrast, boys are not usually expected or asked to carry out similar roles (Scantlebury 2004). Othermothering roles might be a deterrent in the case of female adolescents; often keeping some females away from school, depriving them of adequate educational opportunities. Othermothers frequently have to stay home to take care of younger siblings. Scantlebury (2005) identifies Othermothering practices as a form of inequity between boys and girls.

BACKGROUND

The research in this chapter was conducted through *The Mathematics Sciences Partnership in New York City* (MSPinNYC), which is a joint project between the New York City Department of Education and the City University of New York. The focus of the project was to improve middle and high school students' performance in the critical areas of mathematics and the sciences. The MSPinNYC also aims to link college faculty in the sciences and education with high school teachers in an effort to improve the teaching practices of these teachers and create sustained and long-term improvement in student achievement in math and sciences. This project intends to implement an innovative model called the *Collaborative Teaching Laboratory* (CTL), an approach that includes the creation of research-based groups in mathematics and the sciences in participating schools and promotes professional development. The schools selected (Hub schools) to participate in this project were expected to become centers for reform. The schools were chosen because of their students' performance – below citywide averages. As exemplars of mathematics and science education and having undergone substantial cultural and practical changes, hubs would play significant roles in teacher education programs and in spreading successful practices by partnering with nearby schools and serving as centers of reform activity in their regions. Integral to the project was an intensive summer program.

During the five-week summer program, high school teachers (prospective, new and experienced), college faculty, and undergraduate students collaborated to improve their teaching practices and facilitate students' learning. Three groups of students were divided according to the subjects taught (Chemistry, Living Environment and Mathematics), and each group had a teacher-researcher team (TRT), in which a teacher-researcher investigated learning and teaching while teaching. Each TRT was composed of college faculty, high school teachers and undergraduate students interested in teaching. This study is drawn from data resources from the first summer program of the project.

DESIGN OF THE STUDY

This study documents my experience while working on the evaluation part of the MSPinNYC project. The evaluation team conducted ethnography and collected quantitative data. A variety of data resources were used in an ethnographic analysis. The observations of the students in the summer took place over the five-week period from July 12 to August 16, 2005. Two researchers observed three fields (classrooms, laboratory activities, and tutoring sessions) at various times throughout the study. The schedule was arranged so that each researcher observed all fields twice a week. Team meetings were scheduled twice a week; one meeting was with the team members observing the same subject group, the other was with all the members of the evaluation team. During the meetings, we discussed the data collected and decided on which aspects of research proceeding we would focus on for the following week. The findings were organized with illustrative vignettes of supporting evidence, and their associated contradictions. Throughout the summer program, I explored the extent to which students understood the content of the activities in which they were engaged in the different fields and how they represented their understandings in the exam. Specifically, in this study, I investigated how the structure provided by the summer program expanded or truncated the enactment of a one particular Latina student's (Kelly) chemistry knowledge, and why?

RESEARCH METHODS

I videotaped and audiotaped the three fields of the summer program the classroom, lab, and tutoring sessions. Field notes were taken in these three fields as well. A number of artifacts were collected, including copies of answer sheets from mock Regents exams; copies of problems, questions solved in the tutoring sessions, and copies of post-assessment of different class activities. Digital pictures of students' work were also taken. Data were compiled into written field notes and/or video vignettes. The video vignettes were created using iMovie, and QuickTime Pro. For the purpose of this study, I used the responses of students on the first four of the six Regents exams administered during the five weeks period in which the classes were held (the fifth one was given to students before I could make a copy, and I did not have access to the last one). I also collected the questions solved in tutoring sessions, and selected six vignettes from videotapes of the different activities, in addition to my field notes. Each vignette was about 15 minutes long. The video vignettes allowed me to analyze the Kelly's behavior in each field, evaluate her learning, and describe her enactment of Chemistry during the summer. Three of these vignettes were chosen from the classroom where she demonstrated not only her understanding of the Chemistry concepts and her ability as an independent learner but also moments of her non-engagement in the lecture. One vignette was selected from the laboratory session where Kelly showed both a caring attitude

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towards her peers and a good understanding of the Chemistry concept. Finally, the other two vignettes from the tutoring sessions showed Kelly's engaging interactions with the teaching staff, her caring and supportive roles, and her understanding of concepts that she did not answer correctly in the mock exams. My analysis focused on the porosity of the fields in the summer program and her roles at home.

THE SUMMER PROGRAM

In spring 2005, two high schools, namely Frank High School, and Orchard High School (all names mentioned in this chapter are pseudonyms unless mentioned by the author) were chosen to participate in the MSPinNYC. Their first involvement in MSPinNYC started during the summer program of 2005, in which several mathematics, living environment, and chemistry teachers participated along with some of their students. The summer program was held at Seeker College, which, for several years, was the host of a summer institute for high school teachers. It served as a model for the MSPinNYC.

Twenty-three students from the two schools participated in the Chemistry Regents prep for the summer. Although the students from Orchard High School were not expected to take the Chemistry Regents exam at their school, these students (upon recommendations of the school's principal and their teacher) were admitted to the program and were expected to take the official summer Regents exam at the end of the program (in order to earn a high school diploma, every public school student in New York State must have a minimum of 22 specific high school credits and pass 5 identified Regents examinations). During the five-week period, the teaching activities were scheduled from 10:00 AM to 5:00 PM every day. During the first and the second week, the classroom and laboratory activities were done either in the morning or the afternoon. Tutoring sessions served as reinforcement for what was taught in the classroom and the laboratory. At the end of each week the students were given a mock Regents exam as a measure of their learning and as practice for the real Regents exam. The scores on the Regents exams were used as indicators of teaching and learning effectiveness and to assemble the groups in the tutoring sessions. A total of six exams were administrated; five of them were previous Regents exams taken from the New York City Department of Education website, the last exam was the official summer Regents exam.

The teaching staff schedule was planned to give everyone a chance to participate in the lectures either as a lead teacher or as a support teacher. During the lab periods, the teachers who were responsible for the lectures and the tutoring sessions were planning and getting ready for their teaching. This arrangement worked well due to the ratio of educators to students. In the chemistry TRT there were twelve teaching staff and six to ten rotating student mentors (students fulfilling field work requirements). Among the twelve were four high school teachers, three college professors, and five undergraduates.

ORCHARD HIGH SCHOOL

One of the reforms employed to get higher level of performance from low achieving high schools was the creation of either self-contained Small Learning Communities (SLCs) or Small Schools (SCs) from existing schools. In 2002, aligning with this trend, Apple Valley High School was divided into three small schools. Orchard High School is one of them. The school mission statement indicates that it was created to “provide a family-like atmosphere in which student needs receive immediate attention in order to foster student development and academic achievement.” The school is located in the Bronx section of Region 9 of the New York City Department of Education in an urban, low income, working class, Latino/a and African American neighborhood. Orchard High School housed students from grades 9 to 12, with the academic 2005–2006 year’s 12th grade being the first graduating class of the school. The average class size was 20 students. In 2004, 61% of the students were Latino/a, 38% were Black and less than 1% were Asian, with 51% female and 49% male. 82% were eligible for free lunch and only 8% of the students were enrolled as English Language Learners.

At the time of this study, the 11 teachers of the school were all licensed and had more than two years of teaching experience. Seven teachers held at least a master’s degree. Four of these teachers participated in the summer program, each being the only teacher teaching his or her particular subject at the school. Each small school occupied a specific space in the building and interactions among the three schools’ members were very limited. Orchard High School occupies the third floor and half of the fourth floor of the building that houses the Apple Valley community. The two other schools are accommodated within the remaining floors of the five-story building. A disadvantage of such structure is that each school inherited the classrooms on their allocated floors and, since there are no instructional interactions between the schools, specialized classrooms were not shared. This unbalanced distribution of resources left Orchard High School with no chemistry laboratory. This downside is not atypical; similar problems were reported in Small Learning Communities opened in Philadelphia in the early 1970s (Tobin 2005).

KELLY

Five students from Orchard High School enrolled for the MSPinNYC summer program. Three of them were girls and two were boys. One girl did not come because she was needed at home to take care of a younger sibling since her mother had to work. The case of this female student reinforces Scantlebury’s point that in many cases girls are absent from school, not because they are disinterested in learning, but because of family responsibilities and extended roles.

In this chapter, I focus on one of the two remaining girls: Kelly, who is an 11th grade student, 17 years old, and born in Ecuador. Kelly has three brothers and is the oldest child. She seemed to be doing fairly well in school and had just passed her

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Living Environment Regents exam with a scaled score of 70. Kelly was asked to write one paragraph describing her family and her neighborhood. She wrote the following:

Right now I live with my mom in Manhattan and my father lives in the Bronx. My parents have been divorced for 10 years and I am the oldest out of all my siblings. You could say that not only am I mother figure to them, but also a role model to my three brothers. My neighborhood is an O.K. place to live at. I live in the projects, which I can consider a safe place. You would not get into problems if you just worry about yourself and don't get into any conflicts.

Kelly is not just a student and a daughter but she has extended roles as an Othermother and as a role model for her siblings, enacting a range of mother type responsibilities such as helping with cooking, laundry, etc. Kelly seems to be seriously aware of her influence on her siblings: "You could say that not only am I mother figure to them, but also a role model to my three brothers."

THEORETICAL FRAMEWORK

In fall 2004, when I got involved in the MSPinNYC project as a member of the evaluation team, I knew virtually nothing about educational research or education methodologies and pedagogies. I had an academic training in Organic Chemistry and was interested in doing research in urban education. Although I had come to realize that content knowledge of a subject does not make someone a good teacher or an educator, I did not learn much about pedagogical methods. I participated in the evaluation team with another four students; all of them were candidates for the doctoral degree in urban education under the supervision of a distinguished professor of urban education. Often, I felt worthless and in despair. Fortunately for me, ethnography was at the core of the evaluation plan, and none of the other students were familiar with qualitative evaluation. Together we learned how to employ fourth generation evaluation (Guba and Lincoln 1989) in which numerous quality criteria are applied to ensure that the data, their associated analyses, and interpretations are credible, and that the evaluation makes a positive difference to the participants' lives. This methodology requires participants, at all levels, to be identified and to be given a voice so that the study reflects a common shared experience. We learned how to observe, videotape, interview and interact with the different participants and to obtain and use a variety of qualitative data resources such as field notes, interview transcripts, artifacts produced by the participants, email exchanges, vignettes, etc. A significant component of qualitative research is data analysis. In analyzing the data resources, two questions must be answered. The first one is: what is happening? And the second one is: why is it happening? Answering the first question was not much of a problem for me, because it is describing what I see (although I later realized that description of what's happening relates strongly to my theoretical framework, as well as my biases). But, when I had to answer the second question I truly stumbled. Attempts to answer that question required a theoretical background that I did not have.

As I was always interested in knowing more about how people learn, I became very interested in learning about qualitative research, because it provides a rich description of contextual factors. Not only does it produce comprehensive information, but it also uses the participant's backgrounds and observations to describe the setting and all the variables related to the subject under consideration. I believe that sociocultural and economic context of a student's life mediate her/his abilities to learn and reflect on knowledge production. I adopted William Sewell's (1992) perspective on culture, along with Pierre Bourdieu's (1993) theory of power and practices, and Randall Collins' (2004) sociology of emotions as theoretical foundations for my research.

In this research, I predominantly used Sewell's approach in searching for patterns of coherence and contradictions, as they are dialectically interconnected and I tried to use them to understand the role of the structure of the summer program on Kelly's agency as it necessitates access to the resources of a field and the cultural capital needed to appropriate them.

LEARNING AT THE SUMMER PROGRAM

In the classroom

In the classroom there were usually two lead teachers and the rest of us served as a support to the teaching and learning process, sitting next to the students and assisting them to understand what was going on in the class and answering their questions. In this summer program the students could not only interact with the lead teachers but also with the teacher or teachers sitting next to or near to them and also with their peers.

In the classroom, Kelly was engaged. She would discuss the questions with the other learners (students with the highest grades in the mock exams) and with the teaching staff sitting next to her. She was attentive and very determined to pass the Chemistry Regents exam with a good grade (the goal for the students was to pass with a scale score of 80% or more). Kelly did not rely much on the teaching staff sitting with or near her. Once an assignment was given, she would try to do it on her own first. When needed, Kelly would look at the periodic table on the wall; searching for answers. She would turn to her friends (who were also students and from the same school) for help first before asking the teaching staff nearby. And often she needed very little help. The excerpt below, which is a description from video analysis of a classroom activity, shows how much Kelly tried to solve the problems herself first before asking for help and how able she was to continue working independently after the help was provided.

Kelly has her finger on her lips; she stares at her problem sheet, her eyebrows are raised. She is trying to figure out the problems that the lead teacher just asked them to solve. At her right is Hiris, a teaching staff and at her left is Donald. ... For more than a minute, Kelly refuses help that is volunteered to her, purposely trying to solve the problem on her own (still in the same posture and ignoring the conversation that is taking place between Hiris and Donald). Hiris addresses Kelly directly. Kelly

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opens her mouth, lifts up her eyes to acknowledge Hiris while focusing on the sheet. ... Hiris points at something on her sheet; Kelly closes her lips and goes back to her initial posture while Hiris is trying to help. Now she gives full attention to Hiris. Kelly seems to have returned to her own reflection when she raises her hand in the direction of the blackboard, puzzled, points with her pen and asks Hiris about something on the blackboard. Kelly seems to have regained her confidence, putting herself down to write with a satisfied face. Kelly is back focusing on her work, solving the problems. Kelly only needs a little push and continues to work on her own until the end of the session. In another lecture, Kelly is captured explaining how she differentiates and identifies acids and bases:

- Kelly: Just remember acid plus base equal salt and water. The H^+ is the hydrogen ions, it's the acid and the OH^- is the hydroxide ions, it's the base. That's what gives you the water in the reaction.
- Donald: How do you know, which one has the H^+ ? I'm confused when I see $NaHCO_3$ and CH_3COOH . I thought $NaHCO_3$ was the acid and CH_3COOH was the base but I was wrong.
- Kelly: Yeah! It's easy with HCl , H_2SO_4 , $NaOH$ and NH_3OH but some are tricky like $NaHCO_3$ and CH_3COOH . You need to know if it donates H^+ or OH^- ions. If it donates H^+ ions it's an acid, if it donates OH^- ions it's a base. You see ...
- Donald: I need lot of practice with that.

Although, Kelly is usually active and well engaged in the classroom, at times, she seemed bored or not challenged by the class materials. Prior to the previous vignette she appeared to be looking sleepy and bored in the lecture. This is a contradiction to Kelly's attitude for what was done in the classroom. Usually, she has a good engagement in the learning process, but in this instance, Kelly had a passive engagement and was not in synchrony with the teaching staff. Her interactions with Donald suggested that her demeanor during the lecture was not an indication of no learning occurring. Kelly adopted the Othermothering role in this vignette.

In the lab

Kelly seemed to be at ease during the lab periods I observed. Although, she did not have any prior experiences with chemistry laboratory activities, she seemed very comfortable with what they were doing. One of the lab periods was about the reactivity of metals and the students had to test the reactivity of different metals with solutions of Hydrochloric Acid. During this lab, Kelly worked well with two other students and played a central role in leading the group in the different steps of the experiment: holding test tubes to observe reactivity and writing up the group observations.

More than demonstrating how Kelly was involved in the lab, the recordings captured the enactment of her caring role in the laboratory activities. She was in control, getting things done (Donald, can you please get the solution?) and keeping the others in her group on-task (Fritz be serious and record the observations. It's bubbling, what do you think, reaction or no reaction?) She was not rude or authoritarian but caring and supporting (You should clean everything and leave them in order). When the work assigned to the group was not done she would finish the job just to have the work done. She was able to use the role of Othermothering in different capacities; as a caring peer, facilitating the understanding of chemistry and to make sure that the work was done. The next vignette highlights some of these roles.

- Kelly: Fritz, you should have dried the test tubes before putting them on the rack
- Fritz: They'll be ok. Let's do the post exercise
- Kelly: First we should look at our results and try to understand what happened in the test tubes.
- Donald: Why? They didn't ask us to do that?
- Kelly: That will help us answer the post exercise questions.
- Fritz: Uhmmm ... OK
- Kelly: We had to react five metals with HCl; some reacted, some did not. We have to know why? Hurry up ok we don't have much time.
- Fritz: Yeah, Mg was the most reactive. That was cool.
- Donald: And nothing happened with Al.
- Kelly: We should look at the periodic table to compare them. Let's do that

I can recognize in her behavior, the impact of her extended role as a mother figure for her siblings. In the lab, she was reproducing this role of taking care of things, coordinating activities (feeding time, study time and bed time) at home and helping with homework.

In the tutoring session

Whether she was tired at 3:00PM when the tutoring sessions started, or she was not challenged by the tutoring assignments, Kelly would do the work and moved on with not much enthusiasm, in contrast to her participation in the lecture and the lab. The assignments seemed to be easy for her. As soon as they were given and assigned, she would start working on the problems and would finish before the others. She participated in the discussion, was aware of what was happening, and she was in synchrony with the teaching staff and the group. Video analysis shows synchronous hand gestures between Kelly and Prof. Toddler during a tutoring session, making gestures with her hands at about the same time as Prof. Toddler (Prof. Toddler used

big wide hands movements, like big waves). She kept eye contact with him, going rarely to her notes or the problem sheet for a few seconds until they were done. Even when the others were discussing their assigned problem with the teaching staff, Kelly remained focused on what was being discussed, nodding her head or grimacing when the answers given by another student were incorrect but not answering the question unless the teaching staff asked someone from the group to help.

Analysis of the three teaching fields showed Kelly to be interacting well and participating in the learning process, enacting her chemistry knowledge in each of the fields. While in the classroom and the lab sessions, she was verbally engaged primarily with her peers, in the tutoring sessions, she interacted mostly with the teaching staff. In the lecture, she was engaged in the lessons, listening to the lead teacher, using the resources available when she needed them and discussing the problems with her friends. During some lectures, the students were asked to go to the blackboard to solve problems. Kelly would be among the first to finish and would discuss with her friends their answers. She usually solved them correctly. Kelly was also one of the students to review the Regents exam taken the week before and try to solve the questions that she did not answer correctly. From observations of these fields, I can deduce that Kelly is knowledgeable of the chemistry curriculum; she enacted her knowledge in solving the problems, discussing the answers and the results obtained, observing and drawing conclusions from her experiments. Also, analysis of videotapes from these three fields revealed the enactment of Kelly's expanded role as an Othermother in her relationship with the students. The structure of these fields provided ways for her to enact her agency as a caregiver to Donald and in doing so; she was able to act, thus, expanding her agency. She used the structure provided by the activities of the program to play that role, using the resources available to her. At home, she probably uses cooking, cleaning, laundry, babysitting to fulfill her role as an Othermother; in the summer program, she used her knowledge of chemistry to enact Othermother roles and as a result got to do a lot more chemistry in several fields. Her extended role allowed her to become proficient in chemistry. Kelly used the resources available to her as a student to act as an Othermother, enacting positively her science and succeeding in her exams.

Kelly's Regents exam scores

Kelly's scores for the Regents exams went higher during the summer from a 21 on the first exam to 53 on the second and 66 on the third, with a higher score of 71 on the fifth exam. Kelly passed the official Regents examination with a scaled score of 78. Clearly, Kelly was able to answer more questions correctly after each week. The increase in her grades attests to her growing knowledge of chemistry and the structural features of the summer program that supported her expanded agency. She did learn chemistry during the summer program and was successful in reproducing this learning in her exams. Although her grades increased each week, somehow there was some disappointment on my behalf. I always felt that she could do better. When

a student's participation in class is good, when one has seen her positive enactment in the laboratory and tutoring sessions, one could expect her to do well on her exams. So, even though her attitude, participation, and understanding of the materials were high during the different activities, her scores were not reflecting the same level of acquisition or understanding of the concepts as shown in the three fields.

Analysis of videotapes from the lectures and the tutoring sessions showed that there were times when Kelly looked bored. Maybe at these times, when she looked bored, sleepy or disinterested, she was actually confused and did not understand what was being taught. It has been documented that students who find it difficult to understand what is being taught in class, sometimes express disinterest and indifference in the class. Could it be that Kelly was not bored at all but did not understand the materials and lost interest in what was happening? The mismatch between her scores on the exam, and her attitude in trying to solve problems on her own, and trying to figure out some of them before she asked for help represents a contradiction. If so, the summer program might have only reinforced her prior knowledge (learning time was actually review time for her), but did not add to her stocks of knowledge in chemistry. In an attempt to understand why Kelly's grades were not aligning with her enactment of chemistry in the other fields, I took a look at her answers in the first four Regents exams taken during the summer. First I realized that Kelly's answers show a progression in her knowledge. Most of the questions she missed were answered correctly in the subsequent exams. Since a similar question as the incorrectly answered question was not repeated in the other exam, I gave special attention to that question and noticed that Kelly was not able to relate to the key concept of acids and bases. I was prompted by these findings to go back to the videos of the classroom and the other fields to analyze her interactions while the subject (acids and bases) was taught. I found videos of the class activity and tutoring session where the subject was taught. An excerpt of field notes describes Kelly as such:

Kelly answers questions from the sheet, segment after segment. She looks comfortable and capable of doing them. As a matter of fact, no teachers are sitting near her. She interacts mostly with Donald while answering the questions. Enough time is given to the students to finish the work. Kelly is one of the students to finish and waits for the rest to be done before they can see another segment. Later that day, Kelly shows a good understanding of the concept of the Arrhenius definition of acids and bases and properties.

This tutoring session happened the same day Prof. Toddler and Donovan taught Arrhenius Acids and Bases. Kelly was gesturing to help Donald and Fritz answer questions about Arrhenius Acids. She was prompting Donald to use the list of acids and bases given in the reference table to identify which compound was an acid. She interrupted the teacher several times to remind Donald about how to identify hydrogen and hydroxide ions and the product of such reaction. The other students were listening: a couple looking at their sheet and reference tables trying to keep up with her explanations. There was an obvious contradiction between my field

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observations, the recordings, Kelly exhibiting a full and solid understanding of the concept of acid and base and yet did not reproduce this ability in her exams. Kelly mastered the subject well enough to be able to help Donald find the correct answer to the question that she herself missed in the exams. Artifacts collected from class activity revealed that Kelly understood what was done in class and answered the questions in a satisfactory manner. In the tutoring sessions, she was knowledgeable did the assignments, discussed them with the teacher and, when permitted, she helped her friends. At the end of the week, when she took the Regents exams, she incorrectly answered some of the questions that previously she had shown a good understanding of during the lecture and the tutoring. During the summer program, no homework was given to the students; all learning activities were done at the college. It is interesting to note that acids and bases were among the topics not covered during the academic year at Orchard High School. I considered the possibility that her low performance on the topic of acids and bases was due to the fact that the topic not being taught at Orchard high school. This is possible since the three students from that school, who were cadets (the most advanced student in the summer class), failed to reproduce their understanding of the topic in the exams. The pattern for students to perform poorly on topics not taught at the High School did not hold up. I examined the answers of the students above for the two other topics not taught at Orchard high school: oxidation-reduction and organic chemistry and questions were answered satisfactorily.

CONCLUSION

Although, Kelly was actively involved and enacted her chemistry knowledge of the Arrhenius definition of acids and bases in the lecture and in the tutoring (the laboratory period where the subject was investigated was not observed), she was not able to reproduce this knowledge in the exams. My observations of Kelly's enactment of chemistry in different fields confirm the fallibility of relying on one method of assessment, such as the Regents examination, to represent the knowledge of a student. Kelly enacted her knowledge of Arrhenius definitions of acids and bases very well in the classroom and in the tutoring session, but was not able to enact that knowledge in her exams. In general, Kelly showed a very good understanding of the topics of all the lessons, yet her scores on the exams did not reflect the knowledge she was enacting in the other fields.

I believe that Kelly was probably able to enact her knowledge in chemistry in the fields where she could extend her agency by being an Othermother. In all three fields: classroom, laboratory and tutoring sessions, Kelly used her capital of being a helper, a guide and an Othermother to benefit her fellow students, especially her boyfriend Donald. Considering the Regents exams as another field, which is structured to emphasize an individual acting independently of others, Kelly could not act as an Othermother and her capital that is used to promote the well being of others could not be enacted to show her knowledge of chemistry – as it can be in

the other fields we explored in this study. In that field where she could not expand her extended role, she was less proficient. In this case, the role of Othermother, contrary to Scantlebury's identification of this role as a source of inequality (Scantlebury 2005), was favorable for the student. In a recent conversation with Kate Scantlebury, she communicated to me that recent studies showed corroboration with my findings of students using the role of Othermother to their advantage in the classroom and in the learning process. Her research only revealed this trend when female students are grouped together; the inequality surfaces in a mixed group of boys and girls. In my case, Kelly worked mainly with boys and was able to use this role into her advantage. Kelly was able to enact her chemistry knowledge more when she was also able to be an Othermother for the boys. Her agency was enacted in this role and allowed her to enact her knowledge. When her agency was truncated in the field of the exams, her enactment of chemistry was diminished.

As I am closing on this case study, I observed that Kelly only has male siblings and perhaps acting as an Othermother for the boys in the summer program was facilitated by the gender commonality of both groups (her siblings and the group of boys during the summer). It would be interesting to investigate the enactment of this role with respect to the sex and other patterns of the groups being care for. It would be fascinating to observe this behavior in boys. In other words, do boys exhibit "otherfathering" roles?

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11. TWENTY QUESTIONS ABOUT COGENERATIVE DIALOGUES

Abstract The chapter explores 20 central questions that relate to the development and use of cogenerative dialogue as a means of improving the quality of teaching and learning, getting to know the culture of others in a classroom, and establishing a place for the practice of critical pedagogy. I describe how cogenerative dialogue originated from an effort to use students from high school classrooms to assist their teachers to “better teach kids like me.” These initial conversations about practice were focused on identifying contradictions and creating ways to change the classroom in an endeavor to remove contradictions. We then realized that conversations such as these could provide for the development of shared responsibility for what happens in the classroom. We also noticed that students spoke eloquently in cogenerative dialogues, listened attentively to one another, and focused on successfully interacting with others. Nowadays, cogenerative dialogue is used in interpretive inquiry as a research method that gives voice to students and allows for differences to be identified and explored in an effort to improve the quality of learning in schools.

When I first came to the University of Pennsylvania (Penn) from Florida State University (FSU) there was a project just about to start. The main idea was to get two students from each class to advise new teachers after each lesson on how to “better teach kids like me.” The students would meet with the new teachers soon after the lesson and in a discussion the new teachers would listen and ask questions and the high school students would be positioned as experts. I was enthusiastic about supporting this project because Stephen Ritchie and I had used a high school student as a researcher in a study we had done while Steve was on a sabbatical leave at FSU.

After one year of having students involved as coaches for new teachers we decided it was more important to have conversations in which new teachers and students would share the turns at talk and the types of talk. This was the beginning of cogenerative dialogue (hereafter cogen). When we started to use coteaching as the primary means for learning to teach we also began to use the term cogen for the conversations about shared experiences from a lesson.

QUESTIONS AND ANSWERS

Question 1: What is cogen?

Answer 1: Cogens are reflective conversations among selected participants. One of the key purposes of cogen is to identify contradictions that might be changed with the goal of improving the quality of teaching and learning – that is, cogen is part of a process of critical pedagogy. As such all participants in cogen are encouraged to speak their minds, identify specific examples to illustrate where improvements can be made, and also identify examples of exemplary practices or counter examples of those that exemplify a need to change. It is imperative that all participants speak and are heard. Hence, it is important to encourage respectful interactions where those who speak are listened to, all participants make an effort to address points that arise, and those who are silent are invited to participate. As part of the rule structure for cogens we emphasize that the turns at talk and time for talking should be shared among participants and any speaker should not speak continuously for too long. The efforts of others to get involved should be honored. Also, points that arise in discussion should be noted and, when actions are required, the group should come to an agreement on what is to be done and accept responsibility for enacting agreed to changes in the classroom. For example, if there is agreement that the teacher will ask fewer questions during science lessons, then all participants in the cogen, including the teacher, would have a responsibility to ensure that this happens. It is not left only to the teacher to ask fewer questions – students can provide feedback on the frequency of questioning and cue the teacher appropriately.

Question 2: How is cogen usually set up?

Answer 2: When cogen is used for the purposes of critical pedagogy, that is to make classroom learning environments more equitable, the number of participants is often four to five. For example, early on a teacher might set up cogen to consist of the teacher and three students. Usually students would be selected to be as different from one another as possible. By emphasizing diversity an assumption is that social life is polysemic and is experienced differently by participants who are positioned differently in social space. Hence, different perspectives are encouraged and efforts are made for all participants in cogen to understand these differences and learn from them. Often times differences in the ways individuals in a cogen identify and explain shared experiences will be contradictory and different descriptions can become a focus for discussion and change.

Question 3: Why did you use the term cogen?

Answer 3: The meaning of co- in cogen is together. We wanted to use a term that would communicate that participants would talk about shared experiences and in the process collaborate (i.e., work together) to produce shared understandings and outcomes. We wanted to be certain that outcomes were generated from each session and we established a rule to increase the chances this would happen –someone

would ask at the end of a cogen: “What did we cogenerate today?” Wolff-Michael Roth suggested we call the activity cogen. We were using a rather cumbersome name for what was happening – praxeological sessions – meaning talk about praxis. Neither the new teachers nor the students liked this term and Michael suggested cogen, which was a term that Eldon and Levin (1991) had used in earlier research.

Question 4: Who can participate in cogen?

Answer 4: Since cogen focuses on discussions of shared experiences, the participants can be selected from any of the groups participating in a given field. For example, in classrooms we have typically included teachers, several students, one or two researchers, a school administrator, and a university based teacher educator. However, such a wide range in the roles of participants will only occur if these people, in their roles mentioned above, participated together in a lesson. That is, only insiders are invited to participate in cogen sessions.

If the focus is on improving ways in which activities are undertaken in a science department within a school then likely participants in cogen might include one to two students, several teachers, the head of the science department, and an assistant principal.

Question 5: Is it useful to have outsiders participating in cogen?

Answer 5: As long as an outsider is willing to come to the class (if the focus is on improving the quality of learning environments) and coteach I can see only advantages in having another set of eyes and ideas to inform participants on how to improve the quality of the activities. What needs to be avoided is blaming one group or another. For example, we do not want individuals to be singled out as solely responsible for the quality of learning environments. On the contrary, the suggestions for improvement should acknowledge the salience of the individual|collective dialectic and any suggestions should assume collective responsibility for enactment. As changes in roles are agreed to it is important to examine agency|structure relationships to ensure that groups of individuals can appropriate the structures they need to successfully enact changes. To be useful, outsider perspectives must take account of the dialectical link between power to act (i.e., agency) and the provision of resources. Hence successfully enacting agreed to changes in roles inevitably requires changes in rules and materials/tools.

Question 6: How do you start cogen?

Answer 6: There are many ways to get started. Initially we liked to discuss what worked well in today’s lesson and what needed to be changed. It was interesting to find out how there were many differences in what different people identified in such discussions. Later we found it easier to discuss the roles of students, rules, and ways in which resources were made available and used. The focus of these dialogues was on contradictions that arose – that is, exceptions to what usually happened. Identifying contradictions was useful because some need to be eliminated because

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they are not conducive to learning. However, sometimes a contradiction occurs – something that is not typical – that can be increased to make it occur more frequently – that is, to make it customary because the participants in cogen regarded it as an affordance for learning.

When we began videotaping lessons we often asked participants to review the file and identify several vignettes for discussion during cogen. A vignette is usually an excerpt that takes between 30 seconds of class time to 3 minutes. Because we extract the relevant electronic segment we refer to it as a video-clip or video-vignette. The good thing about a vignette is that it is short and it provides a focal point for discussions about what is happening, and why it is happening. In so doing participants can identify patterns associated with what customarily happens and associated contradictions. Because we use electronic video records we can look at what happens frame-by-frame. The video we use consists of 30 frames a second. Accordingly, frame-by-frame analysis allows participants to see what is happening at a microscopic level – in detail using a time frame that reveals interactions beyond the consciousness of participants.

Another common way we use video, when there has not been time to identify salient video-clips, is to replay the video and allow any person in the cogen group to stop the tape at any point to talk about what is or was happening.

Question 7: What are the most important rules for cogen?

Answer 7: All participants are regarded as having equal power within the cogen field. What this means in effect is power to call and convene a meeting, initiate topics, and speak and say whatever is on his or her mind – as long as what is said is respectful, caring and relevant to the conversation. There also is a responsibility to share turns and amount of talk. That means all participants should be active listeners and invite others to participate if they have been silent. Finding ways to include others in dialogue is a responsibility of all participants. Talk during cogen should be focused and care should be taken not to move onto a new topic until the current topic is fully resolved; in the sense that something has been cogenerated. All participants in cogen should be aware that when consensus is reached on any issue there is responsibility for all to act in accordance with what has been agreed. Collective agreements imply collective responsibility and collective action. An agreed-to division of labor can be regarded as a rule to govern subsequent actions, practices, and rituals.

Question 8: What do you do if students do not take cogen seriously?

Answer 8: This has happened frequently. If the students concerned didn't settle down after a session or so we invited them to participate in a smaller cogen, perhaps involving one teacher and one or two students. If this didn't work out well we set it up as one-on-one – that is, one teacher with one student. Usually this worked out well because the teacher and student concerned could focus on building the culture necessary to successfully interact with one another. In a city like New York City this

usually involved a teacher who was culturally different than most of his students. Problems like this can arise because of immigration – for example, when a well-qualified teacher from Egypt obtains his teacher certification and teaches a class with mainly African American, Caribbean American and Latina/Latino youth. The problems arise because of differences in culture due to different ethnic trajectories of the teacher and students. This becomes an even greater problem when the students are from home circumstances of high poverty and the teacher is middle class.

Question 9: Can cogen be done during a class?

Answer 9: The teacher mentioned in the answer to question 11 wanted all of her students to participate in cogen and so she created small groups within the regularly scheduled class time and allowed students to run their own cogen. The frequency was once a week. As teacher she rotated between groups; thereby providing students with time to identify and resolve issues without her being present. This is a variant on the typical way in which cogen is conducted.

One of the first patterns we observed when we watched coteaching video on fast forward was that coteachers taught apart and every now and then they came together for a brief interaction. We called these huddles because they reminded us of what happens in American football – when the quarterback gets the team into a huddle to discuss what the team will do next. Huddles can occur frequently in a class and sometimes students can huddle with teachers to discuss exactly the sort of thing that is discussed in any cogen.

As a group becomes more experienced in using cogen the group size can be increased so that more perspectives are presented and understood. Groups of six to eight are common and in some instances half-class and full-class cogen is regularly scheduled for the purpose of getting most or all students on board with supporting agreed to changes in the classroom. The problem of this sort of cogen is that turns at talk can be infrequent, but the advantage can be that everyone is involved and can commit to agreed-to-changes. In these circumstances the chances of making significant improvements can be high. One idea is for participants in a small group cogen to get involved in whole class cogen to see whether or not they will agree to and support what was agreed to in the small group situation.

Recently we realized that small group tutoring sessions and one on one teaching function as cogen as long as the rules are followed. The advantage of thinking of these activities in this way is to allow them to serve not only the learning of new science subject matter, but also to allow them to serve as sites for producing new culture about teaching and learning. I think this has major implications for professional development and learning to teach. I could imagine a whole “methods” class from a teacher education program coming to a school and having new teachers tutor in small groups and one-on-one situations. This would benefit new teachers and students as each would learn science, how to teach science and about the culture of others. The new culture produced could significantly improve the teaching and learning roles of participants.

Question 10: How do you decide which students to get involved in cogen?

Answer 10: The goal of cogen is to bring diverse perspectives to the attention of participants who have had a shared experience. Accordingly we select students to participate because they are different from one another. Usually we start with students who are most challenging so that strategies can be cogenerated to improve the quality of the learning environment; not just for those students, but also for all students in a class. For example, if we first selected a low achieving female we might next select a low achieving male. Or, if we selected an African American student initially we might select an Asian American next. Also, we wanted it to be possible that any student who desired to be involved in cogen could be involved. Accordingly, students can request to be included or they can complete a request form we make available at the back of the classroom.

Question 11: Who can convene cogen?

Answer 11: Any of the participants, teacher or student, can request and convene cogen. In one of our studies a teacher canceled cogen when she got to be too busy just before a district wide science test the students had to take. She felt stressed and could not set aside any more time to do cogen with her students. After the test was administered she convened cogen and an issue raised by students was to ask why she canceled the cogen at precisely the time students needed them most – in the weeks prior to an important test. This is a good reminder that it is useful to allow anyone to have the power to convene cogen. If she was too busy to be involved it might have been possible for students to meet without her.

Question 12: How do participants get ready for cogen?

Answer 12: In successive cogens there usually will be one or more class sessions in which there have been attempts to enact agreed to changes to the roles of participants, rules for the class, and ways in which materials and tools to support learning are made available to learners. Hence, all participants in cogen can prepare by reviewing what happened in the lessons since the last cogen and, in so doing, identify patterns and associated contradictions. If they do this they will have specifics to talk about when they come to the cogen. If there is a video of the lesson then participants can identify one or more video-vignettes to capture events that are potentially useful discussion points. To sum up, the preparation is for participants to come ready to contribute.

Question 13: What do you expect to be accomplished from cogen?

Answer 13: The outcomes from cogen will be an appreciation and understanding of the perspectives of others. As well, I expect that participants will identify sources of disadvantage and create plans to extinguish them. Usually this requires different roles for teachers and students, changes to the class rules, and changes in the nature, distribution and access to materials and tools to support learning. It is imperative that participants reach consensus on agreed to changes and develop willingness to share responsibility for enacting agreed-to changes in the classroom or school fields.

Question 14: Is cogen always part of coteaching?

Answer 14: Initially cogen was always related to coteaching in our work – a way to get perspectives from students on how to improve classroom environments. After a few years of research we realized that cogen was a field in which teachers and students could learn how to effectively communicate across ethnic, gender and class borders. Then we realized that they would be useful irrespective of the number of teachers. What we have since learned is that even when there is only one official teacher, the students who get involved in cogen will assume peer-teaching roles in the classroom. Hence, cogen can catalyze coteaching between the official adult teacher and peer teachers from the students in the class. I regard this as a highly desirable outcome of cogen.

Question 15: What do you mean by the claim that cogen is a seedbed for cultural production?

Answer 15: We knew from our work on coteaching that when people worked together in a field they became like the other. So, over time they learned about one another's culture, began to anticipate it, and interacted with the other's culture in appropriate ways. Similarly, when individuals interact with one another in small groups, such as cogen, they can become like the other, but perhaps more importantly, they become familiar with the culture of others in the group and learn how to use it successfully to advance the group's progress towards meeting its goals. If we look at what is happening theoretically, action is enacted as culture – as a triple dialectic represented as production|reproduction|transformation. As a participant enacts culture, practices and schema associated with that individual's praxis are available as structures to support the agency of all participants. To take advantage of what others do, it is important that participants know what to expect and then can make sense of what is done so that successful interactions can occur. When successful interactions occur positive emotions, such as satisfaction, happiness, and enjoyment can be produced and spread from an individual to a collective of all participants in cogen.

We have found that when the rules of cogen are followed, that is when talk is evenly distributed and all participants respect one another and listen attentively – then mutual focus is established among all participants, patterns of synchrony can be seen as participants make sense of what others are saying (i.e., head nods, eye contact, short utterances of agreement such as uh huh, etc), and feelings associated with positive emotions can lead to an increase in solidarity. Hence, in cogen many desirable forms of culture can be produced, reproduced, and transformed – but just as seeds can grow when they are nurtured in a protective environment of a seedbed, so too can culture grow within a nurturing cogen.

Question 16: How does cogen afford cultural alignment in a classroom?

Answer 16: Ideally what you want is for appropriate culture to be enacted fluently throughout a classroom. That is, there needs to be widespread synchrony among participants and mutual focus. If this is to happen then students need to anticipate one another's practices, and enact their own culture in ways that are timely and appropriate.

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As I mentioned earlier, cogen is a seedbed for cultural production. Each person can learn to anticipate what is going to happen next in cogen and how to interact to produce successful outcomes. When successful interactions produce synchronous interactions among participants, common mood can emerge throughout a group. For example, feelings like satisfaction, happiness and excitement can be quickly disseminated throughout participants in cogen. When there is common mood among participants, especially if it is positive, then solidarity can develop – once again increasing possibilities that participants will identify with the collective and produce culture that is in synchrony with other’s enactments – or as the question implies – alignments occur between cultural enactments of participants.

In our research we have found that alignments can occur in the following ways: successive speakers will match the fundamental frequencies and the amplitude of utterances at the end and beginning of turns at talk. Also, successive speakers will match the rhythm and emotional mood of speech utterances. Finally, there is evidence to suggest that during interactions gestures and body movements will be synchronized. Hence, high-energy actions from one participant will be mirrored in subsequent actions of others.

Question 17: How is cogen symmetrical in providing opportunities for learning to interact successfully across social borders?

Answer 17: It is not just students who may not know how to interact with others in a classroom. For example, when I started to teach in inner city high schools in Philadelphia I did not really understand the culture of urban youth in the United States. To begin with, I was Australian, white, male, and middle class. My students (as part of my research on the teaching and learning of science in urban high schools) were African American, black, male and female, and poor. For many months my communications with them were usually unsuccessful. I could not get some students even to acknowledge I existed. When I spoke to them, either they ignored me or they were disrespectful. It was essential that I learn to interact successfully with my students and it made sense for me to interact with them one at a time until I had some success. Also, my students had to learn how to interact with me. It was necessary for me to show my respect for them and for them to show their respect for me. Also I had to learn about smiles, eye contact, body movements and gestures – as well as about their interests, fashions and music. As they got to know me and I got to know them, I gradually became more successful as a teacher.

It is a pity that this all happened before we had done our research on cogen because cogen is an ideal activity to produce the culture teachers and students need to create and sustain productive learning environments. If we think about the goals of cogen in terms of producing, reproducing and transforming culture it is advantageous to see cogen as a field to support the learning of teachers and students. If cultures are to be enacted fluently then all participants have to be able to adapt their praxis to the praxis of others. The culture produced in cogen, by teachers and students, becomes part of a repertoire that can be enacted in classrooms as structures that increase learning possibilities.

Question 18: Why are desirable changes in solidarity and identity likely outcomes from cogen?

Answer 18: When people come together in cogen, or in any group situation a powerful need they have is to have a sense of belonging. Having such a sense can make it more likely that they will see the utility of transactions with others. If a person successfully transacts with others in a group the success will likely produce positive emotions – increasing the likelihood that solidarity (i.e., a sense of belonging) will emerge as an outcome. On the other hand, if transactions do not produce success, negative emotions such as frustration and anger can be associated with feelings of alienation (i.e., not belonging) with the group.

As cogen proceeds all participants can monitor whether they are being treated with respect and can enact their roles in the ways they expect. If others encourage their participation and do their best to increase the amount of success, then identities can be affirmed in terms of success, belonging, and acceptance of the goals of cogen. As I explained earlier, the rules of cogen have been established to increase chances that participants will develop solidarity, expand their identities to include collective roles and responsibilities, and focus on attainment of success and positive emotions.

Question 19: What are possible applications of cogen in teacher education programs?

Answer 19: An obvious application of cogen in a teacher education program is in the field experience. As Director of Teacher Education at the Penn, I requested that all new teachers set up cogen at least once a week and on an as-needed basis. For all the reasons that arise from my responses to earlier questions, I regard it as highly desirable for cogen to be an essential part of teaching and learning – no matter at what level the teaching and learning occur. What better way to create more of a sense of shared control for what happens?

As a teacher of graduate and undergraduate courses I can employ cogen to ensure that my students have a voice in the curriculum, sources of disadvantage to them are removed, and changes are enacted to enhance opportunities to learn.

Question 20: How might cogen be used for school improvement?

Answer 20: I regard school as a field that has nested fields within it – including departments, classes, and other places of cultural activity, like the lunchroom. From what we have seen in our ongoing research, cogen can be used to advantage to examine patterns of coherence and associated contradictions in any field. Once these patterns and contradictions are identified they become objects for possible change with the goal of improving the quality of social life in the field. This includes expanding the goals for activity in the field, expanding the range of activities, changing roles of participants, altering rules that apply to a field, and expanding opportunities to successfully use resources to attain goals through participation.

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The challenge for all participants in cogen is to set aside existing power structures (that apply in other fields) to allow cogen to produce forms of culture to improve science education. Of course, at the level of an entire country this may prove to be very difficult to do – and in some cultures the symbolic power of certain groups of people might necessitate a different structure for cogen. Hence, from one country to another cogen will no doubt have to be structured differently, thereby allowing for the possibility of different outcomes emerging. This is not something that should dampen our spirit of inquiry. There is vast potential in the use of cogen across the fields that comprise our lifeworlds. As we enact cogen and make adaptations, my challenge is for scholars to study what happens so that, as a global community, we learn from ongoing programs of research.

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BIOGRAPHICAL SKETCH

Kenneth Tobin is Presidential Professor of Urban Education at the Graduate Center of the City University of New York. Prior to becoming a university science educator in Australia in 1974, Tobin taught high school physics, chemistry, biology general science, and mathematics for 10 years. He began a program of research in 1973 that continues to the present day—teaching and learning of science and learning to teach science. As well as research being undertaken in the Bronx of New York City, Tobin is involved in collaborative research in Brisbane, Australia; Sao Paulo, Brazil; and Kaohsiung, Taiwan. His current research involves multilevel studies of the relationships between emotions and physiological factors associated with the wellness of teachers and students. In his career Tobin has published 24 books, 206 refereed journal articles, and 118 book chapters. With Barry Fraser and Campbell McRobbie he is co-editor of the second edition of the *International Handbook of Research in Science Education*, published in 2012 by Springer. Tobin is the founding co-editor of *Cultural Studies of Science Education*.

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12. TWENTY QUESTIONS ABOUT COTEACHING

Abstract This chapter examines how coteaching arose from problems of finding suitable mentor teachers in a large inner-city school in the United States. The students were difficult to keep quiet and orderly and their teachers were reluctant to give up their classes so that prospective teachers could learn to teach by teaching them. We developed coteaching to allow new teachers to teach together. Teachers experienced and learned from one another's teaching – that is, they learned to teach by teaching at one another's elbow. Since we commenced coteaching we have developed theoretical frameworks that allowed us to better understand how teachers learn to teach by teaching together and, as we learned to look at learning to teach through new theoretical lenses, we expanded the coteaching model to include more teachers teaching together and finally to include students teaching one another and coteaching with their teachers. Recently, we used coteaching as a research method, which gives coteachers close access to the learning, as it happens in praxis. The twenty questions answered in this chapter are central to the concerns of teacher educators, professional development personnel, policy makers and administrators, and researchers.

For more than a decade coteaching, which is an approach to learning to teach, has been used successfully in teacher education programs for new teachers and professional development programs for more experienced teachers. In that time there have been numerous books and research publications on coteaching. These are listed at the end of this chapter. So what is coteaching and how is it seen to be an effective way of learning to teach? What are its advantages and if there are any, how can readers overcome the disadvantages? Questions such as these are addressed in this chapter.

QUESTIONS AND ANSWERS

Question 1: What is coteaching and when did you first begin to use it in your teacher education programs?

Answer 1: Coteaching is used to describe situations in which more than one teacher teaches with the purpose of increasing the learning of all students. When there is more than one teacher in a classroom there are increased opportunities to tailor teaching to the needs of learners. The central part of coteaching is teaching together – in ways that coordinate and complement the teaching among coteachers for the common good of all students. I began to use coteaching in my teacher education program at the University of Pennsylvania in January of 1998.

Question 2: How did you get started with coteaching?

Answer 2: For me it all started with the need to get student teaching experience for a group of student teachers (hereafter new teachers). They were assigned to teach in tough urban schools in inner city Philadelphia. The supervising teachers were struggling to maintain order in the classroom and were very hesitant to give up their classes to neophyte teachers. So, they refused to do so – arguing it was for the good of the students and the new teachers. This was unacceptable to me and also to a school principal who suggested coteaching as a way out. He would create special classes without any supervising teachers and we would assign two new teachers to teach the class together.

Initially I did not like the idea because it seemed to me that the two new teachers would need someone with sufficient expertise to guide their growth as teachers. The principal was not at all convinced about that and assured me that the kids were better off with two new teachers teaching together than a more experienced teacher who was floundering and committed to controlling students and keeping them busy. He felt that new teachers were better prepared in science and were not burnt out – hence they would be enthusiastic about teaching science in ways that would seem fresh to students, involve labs and projects, and have the challenge that so much of the urban curriculum lacked. I agreed to proceed with this initial coteaching arrangement as long as we agreed to study what happened and learn from it.

The two new teachers were wonderful. They challenged the urban youth to learn more, produce more work products, come to school more often and on time, and also to bring their parents into the school. We could also see substantial growth in their teaching even though they did not have a more experienced supervisor to guide them.

We concluded that the initial coteaching experience was a success – although there were features we wanted to change. The way we set up the first experience was for the new teachers to teach the class each morning for 96 minutes and then in the afternoon to go to a suburban school to see how science was structured and taught at that school. Having seen how the coteaching experience was such a wonderful learning experience we decided there was no need to have the visit to the suburban school – feeling that there might be an even bigger payoff if more coteaching occurred in the afternoon. Also, we realized that the term student teacher was not at all appropriate since it implied something alien to what was happening in the classroom. The two teachers were new teachers and as they taught together as coteachers they learned from one another and gained in experience – becoming more proficient at creating learning environments to support the learning of all students.

Question 3: How did you change the next round of coteaching?

Answer 3: I was very impressed with the results of coteaching and so I decided to assign all of our new teachers in pairs to what we called cooperating teachers. That is, one cooperating teacher to two new teachers. This opened up the possibility for different combinations of coteaching – two new teachers coteaching together,

the cooperating teacher with the two new teachers, and one new teacher with a cooperating teacher. I decided to leave it to them to figure out how best to employ the teacher resources to help the students learn. That was what I emphasized – whatever you do focus on the learning of students. Do what it takes to improve their learning.

The other major change we made was to concentrate the new teachers into one school and just a few schools-within-a-school (called Charters). I need to explain that concept. Because of the large size of urban schools there was a tendency for them to be impersonal and so a decision was made at the school district level to break up a school of about 2,000 students into a number of schools-within-a-school. These were called Charters. Typically a Charter would have somewhere between 400–600 students and at least one teacher in each subject area – perhaps as many as 5–7 teachers. If we could assign about 8–10 new teachers to each Charter there was a real chance for the assignment of new teachers to transform curricula within a Charter and hence the achievement levels of students. Placing many new teachers in one school allowed them to form solidarity and create teacher identities associated with teaching at this school and making a positive difference to the lives of needy urban youth.

What we found was that the coteaching seemed to work best when all coteachers taught together. So, in the case of science, if two new teachers were assigned to one chemistry teacher (i.e., their cooperating teacher), it worked out best if all three coteachers taught each class. The main problems we encountered were due to personality clashes between coteachers. If clashes occurred then the coteachers often did not like to work together and tensions were transferred into the classroom and especially into planning sessions. Hence, we adopted a very open stance to the effect that any of the coteachers could request reassignments if the learning needs of the students would be improved. Typically with a group of thirty new teachers there would be up to three moves needed over the course of a year. We minimized this potential problem by paying attention to personality issues before making initial assignments.

Question 4: What were the main outcomes from the use of coteaching?

Answer 4: In any lesson there was a whole lot more teaching going on. That means that students had increased opportunities to learn because there were more teachers and they worked out how to provide teaching on an as-needed basis. The coteachers planned for one teacher to have major responsibility for a lesson and others to provide as needed assistance to individuals and groups. That meant that coteachers needed to watch out for chances to be helpful to students. Accordingly, all coteachers had roles to enact with the whole class, small groups of students, and individuals. At any time the overriding concern would be to teach for the benefit of the whole class – that is all learners. If a coteacher felt that she could contribute she should “step forward” to structure the environment. When a coteacher steps forward to teach then all other coteachers should support stepping forward by stepping back and acting accordingly.

Because coteachers are together; teaching together with a goal of improving the learning of all students – there is a chance to learn from one another by being with one another and experiencing one another’s praxis as it is enacted. That is, coteachers learn from one another by being in a field with them as coparticipation occurs. Being/in/with are conditions to afford learning to teach by experiencing the material structures enacted by other coteachers as teaching praxis. Hence, as a person teaches she also experiences the teaching of others and the students’ praxis as they enact agency and appropriate the dynamic structures of the field. Not surprisingly coteachers become like one another by being with one another – in terms of how they move about the classroom, access resources such as the chalkboard and charts, talk to the class, small groups and individuals, and how they gesture. Over time there can be consistency in how coteachers appropriate resources to structure the learning of the class.

Question 5: Are there obvious problems that arise?

Answer 5: The biggest potential problem is becoming like the other in ways that are not supportive of the learning of all students. One obvious example is when teachers are disrespectful to students.

The way we have addressed this problem is to ask students to let coteachers know what is happening that is desirable and what is not working as best as it could. We ask students to identify contradictions and raise them for discussion. Often we edit video from a lesson – clipping a short excerpt to show what is happening and then discuss possible changes. This is a critical feature of coteaching because so much of what happens in a class occurs unconsciously. Having discussions with students about their experiences in the lesson, especially using video excerpts as foci for conversation is a good way to debrief what happened and reach a consensus on what needs to change. We call these conversations cogenerative dialogues (cogen).

In cogen we have as few rules as necessary. The key rules are that anyone can speak at any time but should not take more turns at talk than others and should not have lengthy turns at talk. There should be no verbal attacks on others – that is, speakers should be courteous and calm. Speakers should be clear and to the point and if someone else provides a sign that they want to speak then the speaker should yield immediately. There should not be competition for turns at talk. Those who are not speaking also have responsibilities to listen to one another and ensure that all topics raised are resolved before moving onto a new topic.

Usually we conduct cogen as soon after a lesson as possible. Two to three students would join all coteachers and any others who were involved in a lesson – such as university teacher educators and researchers. The time taken for cogen is usually between forty minutes and an hour.

The products of cogen are cogenerated outcomes such as changes to roles of participants, changes in rules and changes in the ways in which resources are accessed and appropriated. Hence, at the end of cogen there should be agreed to changes for the next class and also a shared commitment to enacting them successfully. The

responsibility for enacting agreed to changes is shared and it is expected that during a class each participant in cogen will assume responsibility for helping others to succeed. That is, the responsibility for the success of a lesson does not reside with the teacher alone, but with all participants in cogen and the class as a whole.

Question 6: How can coteaching occur in small groups?

Answer 6: In a small group a coteacher can demonstrate knowledge in action so that students experience at first hand how to enact particular forms of culture and coordinate verbal and non-verbal practices. For example, in small groups it is possible to show the verbal aspects of inquiry associated with questioning, explaining, speculating, elaborating and pausing. Similarly, teachers can demonstrate how to manipulate materials. Finally, in an up close situation teachers can reveal to students the emotional components of doing science and especially showing how success can build positive forms of emotional energy.

Interacting with students in small groups also is a wonderful way to build social bonds with individuals and collectives. Also, at an institutional level it is an opportunity for teacher-student relationships to be renegotiated in terms of a different set of referents – for example, in terms of shared responsibility for learning and teaching rather than teachers having control over students.

Question 7: How is coteaching used in one-on-one settings?

Answer 7: While one or more coteachers are teaching a whole class it is an opportunity for a coteacher to interact intensively and extensively with an individual and focus interactions on the learning of that student. Given the goal of enhancing student learning the key issue in working one-on-one with students is doing so without creating distractions that make it difficult for others to learn or for the other coteachers to teach effectively. Hence, it is desirable for the interactions to be suitably quiet compared to conversations between coteachers and groups of students. We have found it essential for coteachers to negotiate the desirability of one-on-one teaching to occur during cotaught lessons – on an as needed basis. To emphasize, the important criterion is not comfort for coteachers but the learning needs of all students. In some instances a coteacher will sit alongside of a student who requests assistance, on other occasions a coteacher will crouch down to speak softly while the rest of the class is otherwise engaged.

This is not a situation in which a master teaches an apprentice. In coteaching each teacher does what is needed to enhance the learning of those with whom he or she interacts. In the process of teaching others' teaching practices occur in the presence of multiple teachers and therefore some of the structures experienced by coteachers are others' teaching. Accordingly, the agency of all coteachers is expanded or truncated by others' practices. By being with others and enacting teaching culture all teachers gradually begin to become like the other – producing new teaching culture, some of it reproducing the culture of others and other parts transforming others' culture. That is, teaching culture is produced in a triple dialectical relationship involving

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production|reproduction|transformation. Of course, learning by being with others might not necessarily produce improved teaching and it is essential for coteachers to speak with one another and their students to ascertain what needs to be continued and expanded and what needs to be discontinued and minimized. Using theoretical frameworks to discuss coteaching makes it possible to see teaching in new ways and consider what is working and what is not.

Question 8: Is there any advantage of students also becoming coteachers in a class?

Answer 8: One of the interesting outcomes from our coteaching research is that more peer teaching occurs. We have also seen numerous instances of teachers co-opting the services of students who are willing to teach their peers. In this way we have seen examples of coteaching that involves an adult teacher with one or more students. The outcome has been improved learning environments and opportunities to achieve at a higher level.

Question 9: How is coteaching different from team teaching?

Answer 9: Team teaching is well documented in the literature and we did not want coteaching to be confused with it. The co in coteaching is very important – a focus on cooperation and collaboration. In many team teaching situations teachers planned together but did not teach together. Or they taught their own students in a shared space, without teaching together in a coordinated way. Often in team teaching situations teachers divide the labor according to their strengths and those with expertise do what they are best at and do not participate when some of their colleagues have more expertise in a given area. This does not happen in coteaching.

During coteaching all teachers will teach together and cooperate with the purpose of improving the learning of their students. At all times judgments will be made on what roles are best and the coteachers will act to complement the teaching of others. If a teacher has something to contribute she will step forward and at that time others will step back to allow her to teach effectively. Depending on the circumstances many coteachers can be interacting with students without disrupting the learning of others. So, coteaching is all about teaching to afford the learning of all. Coteachers do what makes sense from moment to moment and if they are called to do something different they quickly cooperate – whether the call was from another coteacher or a student. Coteaching assumes collective responsibility for the quality of teaching and learning. By collective I do not just mean among the teachers, but among all teachers and students. There is no need for teachers to establish control over students but instead to establish collective responsibility with them for high quality learning environments.

Question 10: How can you justify learning to teach by coteaching? When teachers get hired they will not have a coteacher.

Answer 10: Good point. I like to distinguish learning to teach from being able to teach. In situations in which you want learning to teach to occur coteaching

is extremely effective in allowing teachers to expand their teaching repertoire. Through coteaching experiences conscious and unconscious elaborations occur to the teaching repertoire (or as some might call it, the teaching stocks of knowledge). If a teacher can show particular teaching practices in coteaching setups that does not mean he or she will be able to show the same or similar teaching practices when teaching solo. Once the practice has been learned it is potentially available to be enacted when the right circumstances arise. In a context of new teachers enrolled in a university program I usually want them to coteach and teach solo during a field experience so that what they know and can do while coteaching has the chance to be enacted in solo teaching as well. The teaching identity should be developed not only in coteaching setups but also in solo teaching contexts, which are analogous to those in which the teacher will be hired.

Having made this point about identity, it is important for me to emphasize that the best way to expand what is known about teaching appears to be through coteaching. Hence in a program that seeks to improve the quality of teaching there would be lots of coteaching with different coteachers – over extended periods of time.

Question 11: Is it accurate to think of coteaching as an expert-novice model or master-apprentice?

Answer 11: Neither of these metaphors is especially appropriate. I see the coteaching model as symmetrical. All coteachers teach and as they do so they learn more about teaching by being in the same place as other teachers who also are teaching. So the more experienced teachers will learn from the less experienced teachers at the same time as the less experienced learn from the more experienced. Coteachers will be aware of learning some things and unaware of learning other things. What I mean by that is learning is continuous and always consists of conscious and unconscious parts. Theoretically this is referred to as a conscious|unconscious dialectic – that both occur at the same time.

When we set up coteaching arrangements we should make the expectation clear that all coteachers will learn from one another and that all ways of knowing and teaching should be respected – the key thing is to focus on the learning of the students. Coteachers should act collectively to afford the learning of students collectively – using all the resources they can to achieve the best results. There is not a best way to teach that generalizes to all learners and there is no best way for all teachers to teach. The focus has to be on maximizing successful interactions with students so that they experience success and learn what they need to know and be able to do.

All coteachers should approach coteaching with a spirit of inquiry and a quest to learn from others. All coteachers should be respected and there should not be a claim to authority by those who have taught longer or those who feel they know more of the relevant subject matter knowledge. Instead there should be acknowledgement that each coteacher will contribute in ways that best suit the collective.

Question 12: What are some of the ways teachers can complement one another during coteaching?

Answer 12: If one coteacher is explaining something to the class another can be summarizing the key points on the chalkboard. Another coteacher can be scanning the faces of students, looking to see signs of misunderstanding. If any such signs are observed that coteacher can quietly move to the student who may need assistance and provide such assistance as the other coteacher continues with the lesson. In this scenario one coteacher works with the whole class and at the same time other coteachers enact roles to complement what is being said (e.g., summarizing on the chalkboard) and providing assistance on an as-needed basis to individuals (N.B. the conversation with individuals is quiet and should not disrupt others in the class).

Question 13: What are the most serious problems you have had to address in coteaching?

Answer 13: A difficult problem to address is when there are differences that relate to epistemology of the teachers. For example, Alex was an experienced chemistry teacher with many years of experience and he was coteaching with Victoria, who was less experienced, but also had a strong background in chemistry. Both were wonderful people and wanted their students to learn. Alex believed in inquiry and saw his role as stimulating student thinking. He wanted students to think about tough questions and then come back to him with answers – even if it took a few days. So he would ask questions and leave time for thought. As soon as the pause got longer than a half a second Victoria would step forward and provide an answer to the question. She believed that students learned chemistry best when a teacher with expertise in the subject provided clear and accurate explanations of chemistry. Her efforts frustrated Alex and when they talked about it neither teacher gave ground. Each was articulate about his and her points of view and they agreed to disagree. However, they could not coteach effectively and frustration was evident in the actions of each teacher. These frustrations soon became evident to the students and the coteaching arrangement was dysfunctional. Of course, the issue should have been discussed openly in cogen with students and a shared understanding of what to do could have been negotiated. In this case the cogen worked well but rarely included Alex and Victoria. Alex declined to participate because of his frustration with Victoria and a belief that he was right about how best to teach.

Even though I might agree with Alex about teaching through inquiry, I believe he was wrong to avoid participating in cogen. His actions suggest he actually believed he knew more than Victoria about how to teach these students and he did not accept the idea that there could be collective responsibility for the teaching and learning in a classroom. He and Victoria differed from one another in what they believed were the best ways for these students to come to know chemistry. They saw their approaches to teaching as heading toward different epistemological commitments

and hence as incommensurable with one another. Their positions may have been associated with implicit ontological stances. Alex seems to accept the idea that his way of teaching these students was right, not only for him but also for his coteachers. Similarly, Victoria seemed to hold two views – that her approach to teaching was correct and that her knowledge of chemistry was the most salient factor that gave her equal or even greater voice than Alex in what was best for these students. Neither teacher seemed to acknowledge the legitimacy of the students' voices in suggesting what was best for them. Nor did either teacher seem to acknowledge that different approaches might suit different students at different times and for different subject matter. At the root of the problems between Alex and Victoria were commitments to a one-size-fits-all approach to what constitutes effective teaching. The problem is that Alex and Victoria differed stridently in what they considered was the best way to teach.

Question 14: You mention coteaching with two and three teachers. Is this the optimal size or can there be more coteachers?

Answer 14: I set a rule that any adult who comes into the class should come as a student and a teacher. So, if a researcher comes into a class being cotaught the researcher should not sit on the side and observe, but should do what she can to assist students to learn. Usually this would involve interacting with students if and as they need assistance. I have been in classes being cotaught by a resident teacher, two new teachers, two researchers, a school administrator, and a university teacher educator. This is a total of seven coteachers and only three of them had participated in coplanning the lesson. Even so it worked wonderfully.

In a summer program for failing urban youth I have seen very many coteachers working with almost an equal number of youth in a lecture theater setting. Although the physical arrangement was not ideal there were almost 20 coteachers sitting next to or close to students throughout the lecture theater in a class with one teacher enacting a central role. As the lesson unfolded there were tutoring sessions going on simultaneously throughout the room. The buzz was a working noise and I was impressed with how much teaching was occurring. The coteachers and students expected this and hence nobody seemed bothered by others talking at the same time that central forms of teaching were occurring. My research on this concluded that the roles of coteachers, all 20 of them, were complementary and oriented toward the improved learning of all students.

I do not regard two to three coteachers as optimal. It depends on how many students and how much space. I can see situations in which many teachers could teach just as many students – exactly as was done in the summer program I described above. I imagine this could easily happen in a professional development program or when a science methods class visits a school to do some practice teaching – as a class. Instead of watching an expert teach there could be coteaching supported by conversations in cogen after the lesson. Such conversations could be supported by video and associated analyses.

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Question 15: How might coteaching work in a school situation for in-house professional development?

Answer 15: If resident teachers can be freed up to coteach with colleagues there are chances for teachers within a school to learn from one another by coteaching together. There are many ways I have used to free up teachers to do this. For example, a school administrator can take a class for a designated period of time each week – the best sort of administrator depends on within school factors. Also, researchers and university teacher educators have freed up teachers for coteaching assignments. One of the more innovative projects I have been involved with involved new teachers from a university and high school students who wanted to be peer tutors. The new teachers and a squad of high school tutors took over a class, allowing the teacher to be free for coteaching assignments. In all of these contexts the best scenario occurs when a number of opportunities are provided for coteaching.

Question 16: How do you handle the logistics of coteaching during a lesson?

Answer 16: We noticed in the early days that teachers came together briefly to “touch base” with one another. We called this a huddle as it reminded us of the ways in which American footballers came together to plan out the next play in a football game. Essentially that was what the coteachers were doing – checking in with one another about their possible roles in the next few minutes of the lesson. Other reasons for huddling are to review what has been done so far, to bring salient aspects of the lesson to the attention of coteachers, and to even change the goals of the rest of the lesson. Huddles can be opportunities to review what is working, what needs changing, and what should be done for the remainder of a lesson. As we have had more experience with coteaching we see that huddles can also involve students. In some circumstances huddles have included all coteachers and the entire class – usually when more dire changes in direction are desirable or something that has happened warrants the attention of all participants.

A huddle is cogen that occurs within the time scheduled for class and creates a disruption to the ongoing flow of teaching and learning. It is an opportunity to bring to conscious awareness aspects of a lesson that may have been beyond consciousness – related to contradictions that are deleterious to learning.

Question 17: Do you think coteaching can fit into mentoring programs?

Answer 17: Although I think coteaching can be part of a mentoring project I also think there are some issues that are worth attending to. Mentoring is a construct that seems to imply an asymmetry among the coteachers. I do not think it wise to introduce such asymmetries. It is preferable to emphasize the expectation that all coteachers will learn from one another and that all sources of knowledge should be treated respectfully. A model that reifies power structures that privilege seniority or length of experience may have inherent problems. My experience has been also that mentors often spend a lot of time talking about teaching and telling what should happen rather than getting on with teaching (as praxis) – doing what

it takes to improve the learning of students. Approaches consistent with mentoring might not take into account those aspects of teaching that are beyond awareness and acknowledge that all coteachers can and should learn from one another.

Having identified these sources of potential problems I hasten to note that mentoring programs can be easily adapted to include coteaching as a central part. The inclusion of coteaching expands the possibilities of greatly improving the collective teaching expertise.

Question 18: Is coteaching just another example of one-size-fits-all solutions in teacher education?

Answer 18: I do not see coteaching as a complete solution to learning to teach. It is still important to read about the history and foundations of education and to learn about issues of epistemology, ontology and axiology. Furthermore, what happens when teaching and learning occur should be objects for inquiry – research on teaching and learning undertaken by the coparticipants in classes. These include all coteachers and students. Hence video recording classes and associated analyses are important parts of learning to teach. All conversations about teaching and learning and associated roles of teachers and students are theoretical and it is important for participants to learn new ways to think about what they are and might be doing in classes.

Question 19: When you state that coteaching improves the quality of teaching – how are you thinking theoretically about teaching?

Answer 19: I think of teaching as praxis, that is knowledge in action – it is a type of knowledge that only exists as it is being enacted. Talk about teaching, thought about teaching, and writing about teaching also are forms of knowledge, BUT they are not teaching. Teaching involves transactions between a teacher and a learner, actions of a teacher that structure learning for learners. When viewed in this way, teaching is cultural production, where production is part of a triple dialectic production|reproduction|transformation. As culture, teaching, as it is enacted, consists of practices dialectically connected with schemas.

Question 20: Is coteaching only suitable for Western classes or do you see it being viable in Asian classes, such as in Taiwan and Singapore (for example)?

Answer 20: I think that for too long we have sought answers to problems in education in terms of curriculum. We have attempted to teacher proof curricula and have assumed that there is a best way to teach given subject matter. For that reason we have had a plethora of solutions to problems of teaching that have included uses of individualized instruction, small groups, inquiry approaches, constructivist approaches and even uses of technology. I reject all of these fads. In essence I regard effective teaching as producing the right emotional climate in which students want to learn, feel they are learning, and appreciate that what they learn is useful to them and can improve the quality of their lives. Teachers have to figure out how to allow

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students to create the right mix of emotions that will stimulate them to participate intensively and extensively. Hence, good teaching has to do with cultural alignment. Teachers and students need to get in synchrony and stay in synchrony. So, what a teacher in Taiwan does will differ in many respects from what a teacher in New York City must do to afford the learning of her students. However, your question points to what has to be done to teach students in Taiwan effectively. My response is to coteach with others who have had some experience of being with students in Taiwan – teachers who vary along a continuum from being complete novices to those with extensive experience as teachers. That can and probably should include some Taiwanese students. All can learn from the other about how to effectively teach students in Taiwan. Yes, I think coteaching can be an effective means to learn to teach in Taiwan, Singapore, and elsewhere in Asia. The nature of what happens during coteaching will reflect the cultures of the participants and what happens in Taiwan will look uniquely Taiwanese, differing of course from class to class, school to school, and region to region. I do not expect coteaching in rural areas of Taiwan to be similar to what happens when coteaching occurs in inner city schools.

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13. EMOTIONS AS MEDIATORS OF SCIENCE EDUCATION IN AN URBAN HIGH SCHOOL

Abstract This research employs multiple methods in a multi level investigation of the ways in which emotions afford interactions and participation in a science class and an associated cogenerative dialogue (cogen). A teacher researcher identified a vignette involving an altercation he had with a student in which anger and frustration mediated what happened. We highlight the importance of cultural adaptation in enacting high quality science education. Notably, negative emotions generated in the class were reproduced in cogen involving the teacher, student, and other coteachers and students. We show how synchrony, entrainment, and shared mood facilitate the emergence of solidarity among subgroups within cogen and marginalize the teacher. Interactions in the science class and cogen highlight the ambiguity of laughter, which served the purpose of sustaining positive emotional energy and catalyzing resistance to the teacher.

Ethnicity and social class are categories that segregate and stratify urban schooling. Recent estimates suggest that between one-third and one-half of minorities do not earn a high school diploma (Education Week 2007). Graduation rates are related to race; approximately 40% of black and Hispanic compared to about 70% of Asian and white students graduated from high school in New York City (NYC). This is a problem since it is practically impossible for individuals lacking a high school diploma to earn a living or participate meaningfully in civic life (Neild, Balfanz, and Herzog 2007).

In 1989 the State of New York initiated a program called School Under Registration Review (SURR) and since that time about 70% or more of the schools identified as non-compliant are from NYC, many from the Bronx. City and State resources are allocated to improve the performance of schools on the non-compliance list and more than 20% were turned over to the control of private firms. Schools on the SURR non-compliance list that do not improve markedly within a given time are closed. New York High (NYH), which is the site of the research reported this chapter, is situated in the Bronx in a building previously occupied by a school that was closed.

Students from the Bronx have priority for admission to NYH, which offers medical internships through its partnerships with area universities and businesses. Many of the students are immigrants (or the children of immigrants), from Puerto Rico and the Dominican Republic. The Department of Education web site lists

the racial distribution of the students at the school as 3% white, 46% black, 51% Hispanic and 1% Asian American. Statistical data suggest that at the time of admission students were average to below average in terms of achievement. Possibly because of the school's emphasis on health sciences, the first cohort of students admitted to NYH was more than 90% female. The first class of seniors from the school graduated in 2007.

RESEARCH METHODS

Our multi-method approach to research employs interpretive research (Erickson 1986), augmented by conversation, discourse, and prosody analysis (Harrigan, Rosenthal, and Scherer 2005). We use sociocultural theory as a framework for the micro level, which is constantly unfolding, allowing resources to be appropriated as actors unconsciously enact operations (Roth and Lee 2007). Our approach uses video analysis, which affords frame-by-frame analysis of events separated in time by hundredths of a second. We use Flipcams to digitally record lessons, cogen and interviews. We then use QuickTime to create separate and combined electronic video and audio files.

We adhere to Guba and Lincoln's authenticity criteria, largely due to the standpoint of not privileging theoretical knowledge over other knowledge forms. Hence, we expect to learn from research (i.e., create new theory), educate participants about one another's perspectives, catalyze positive changes in the institutions being studied, and ensure that all participants benefit from the research equitably (i.e., the research embraces social justice and we help those who cannot readily help themselves to benefit from their participation in research). The approach we adopt maintains a connection between schema and practices and gives equal priority to producing positive, equitable, and democratic changes in the classroom and the generation of fresh theoretical insights on the teaching and learning of science.

DATA ANALYSES

Reynaldo Llana, coauthor of this chapter and science teacher at NYH, selected three video vignettes considered salient to the teaching and learning of science in his special education science class. Each vignette was between 7–9 minutes duration. The first vignette was selected from a science lesson on the conversion of units (i.e., 79 mm is 7.9 cm). The vignette involved an altercation Rey had with one of his students. Rey considered the emotion of anger as a productive area for research from which we could learn how to improve the quality of classroom learning environments. Also, Rey selected two vignettes from a cogen that occurred directly after the lesson on conversion of units. Rey was not a participant in the first vignette and he was a principal participant during the second vignette.

We used StudioCode to analyze the three vignettes. The first step was to set StudioCode to capture video 15 seconds each side of a keystroke, which recorded

an event as salient. We then adjusted the length of the clips to ensure that each represented a meaningful event. In some cases, events were longer than 30 seconds and in others they were shorter. We selected five events from the lesson vignette and one event from each of the cogen vignettes. Consistent with William Sewell's event oriented sociology, we used narrative to provide a context for interpretive research and numerous microanalyses of the electronic files. Microanalyses combined frame-by-frame analysis of the video files with computer-aided analyses of the acoustic waves for each event. We used PRAAT to measure time intervals between utterances in seconds (s), the fundamental frequencies of the acoustic waves in Hertz (Hz) and the acoustic intensity (i.e., the amount of energy of a sound wave in the air standardized for time and area) of utterances in micro Watts per square meter (μWm^{-2}). These measures, together with subjective assessments using interpretive methods were a basis for comparing the characteristics of utterances for a given speaker and those of different speakers.

The transcription conventions we used (Table 1) were adapted from those advocated by Paul ten Have (2007).

Table 1. Transcription conventions

<i>Convention</i>	<i>Description</i>
(0.4)	time in seconds of a pause between utterances indicated as a numeral
((Students ... felt))	comments from us are provided to provide context
=	no pause between successive turns
[start of overlapping speech
{2.4}	time in seconds for preceding utterance
\ 12.1 μWm^{-2} \	the power of an utterance in the air measured in μWm^{-2}
ha:	lengthening of preceding phoneme by approx one tenth of a second for each :
(.)	noticeable pause of less than 0.10 s

INEFFECTIVE TEACHING CAN CREATE NEGATIVE EMOTIONAL CLIMATE

Ms. Fereny was assigned to coteach a science class with Rey because the class contained a number of students classified as special education (mainly as emotionally disturbed). However, Fereny was not a certified special education teacher and, although she was a certified teacher of English as a Second Language (ESL), there was a problem since she spoke French and most of her students spoke Spanish. Rey noted that Fereny's background in science was not strong and many students disrespected her because she was perceived to be ineffective and unhelpful.

Due to illness Rey was absent from school for two days prior to the lesson we analyzed. In Rey's absence Fereny taught the class and confused many students about how to convert from one unit system to another (e.g., convert 3 cm to mm). Fereny administered an achievement test focusing on conversion of units and a number of the students did not perform well. These students were frustrated with their teacher's inability to help them learn science and when Rey returned the students asked him to re-teach how to convert from one system of units to another.

WHY SO MANY TEACHERS?

At the beginning of the science teaching vignette, Markist was completing a task on the whiteboard, watched closely by Rey, who was standing at the whiteboard holding a large wooden pointer. For more than five seconds several students laughed loudly as Markist finished his work and returned to his seat. Although the laughter was not necessarily directed at Markist he broke out into a wide grin as he sat down and adjusted his cap. Rey looked annoyed as he stopped working at the whiteboard and began to interact with the class. Event 1 involves 26 seconds of whole class interaction that followed the completion of the laughter. The interactions in Event 1 address teaching, critique of the number of teachers in the room, and a query whether the extra teachers positively mediated learning.

Event 1

Turn	Speaker	Text
01	Rey	we are going to speak with her. take that. I'm going to tell Ms. Fereny ((the special education assistant)) what we're how do you do it. (0.4)
02	Male	now we know. (0.2)
03	Female	will you tell anyone
04	Female	=mister. why do you have three helpers? (0.4)
05	Female	find some kind of help.
06	Female	yeah. so many people [in this classroom.
07	Female	[why have three helpers?
08	Male	[one don't count
09	Female	=they're all
10	Rey	=oh you can answer that? (0.3)
11	Female	all right
12	Female	=anyway { 2.4} ((collective effervescence))

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13 Female all those guys distracted me. (0.5)
 14 Female [yep.
 15 Rey [you can answer that.
 16 Female [he actually likes you pretty much.
 17 Female =I can tell you why they
 18 Rey =I don' t know
 { 0.5} ((female laughs))
 19 Female =what would you ask
 20 Rey =answer that. (0.7)

Turn 01 addressed the need for Rey to re-teach conversion from one unit to another. Rey assured students he would speak to Fereny about how he taught them to do conversions, presumably so that there would be consistency in the approach adopted by coteachers. In turn 02 a male student affirmed that students now know how to do it and a female student raised a question about whether Rey would let others know that he had to re-teach the lesson. The remainder of Event 1 consisted of quick exchanges as different students made points about the quality of teaching.

A female asked why there were three teachers in the class in addition to Rey (one was Fereny, and the other two were new teachers from a science teacher education program at a nearby university). Subsequent comments indicated that some students regarded three extra teachers as too many while others indicated they could use even more help. At turn 08 a male implied that Fereny didn't count, an indication that even though there were three extra teachers, there might just as well be only two. When a female asked why have three teachers Rey spoke much louder than he had done previously as he said, "Oh you can answer that," (1.4 μwm^{-2} at turn 01 compared to 21 μwm^{-2} at turn 10).

Two instances of collective effervescence, which occurred after turns 12 and 18, were signs of the risky nature of what was being discussed. The first instance seemed to resonate with Rey's loud utterance concerning why there were so many teachers in the class. The duration was 2.4s and the power in the air was 11 μwm^{-2} , consisting of calling out and several students laughing. Coinciding with the conclusion of the collective response a female at the front of the class commented to Rey, "all those guys distracted me."

The interactions in Event 1 unfolded as Rey enacted frustration and appeared anxious to get on with his re-teaching of unit conversions. Rey used repetition and intensity of his utterances to communicate that he was not going to comment further on the presence of multiple teachers. Each of these structures afforded student laughter, which was likely created without deliberate intent – that is, features of Rey's conversation, prosody, body stance, gesture and gaze were resonant structures for individual and collective enactment of laughter. It is not clear whether the laughter in these two instances projected happiness or an

apprehension about the direction in which events were unfolding. It is likely that all participants in the class had a sense of the game that allowed them to anticipate that Rey was becoming angry and the students' utterances and Rey's reactions continuously produced structures that forecast the emergence and/or continuance of a negative emotional climate.

A NORMAL INTERACTION PATTERN

Event 2 followed on directly from a pause of 0.7s that concluded turn 20 (Event 1). As Rey taught from the front of the class, he projected his voice so that everyone could hear him. Event 2 provides a sense of what Rey's prosody was like when he taught normally.

Event 2

Turn	Speaker	Text
01	Rey	okay. { 0.8} \15.6 μwm^{-2}
02	Student	I agree (0.7)
03	Rey	how many jumps do we have in here to go from milliliters to liters? { 5.0} \9.8 μwm^{-2}
04	Student	three liters (0.8)
05	Rey	three right? { 0.7} \12.5 μwm^{-2} (0.3)
06	Rey	three liters. { 1.7} \4.2 μwm^{-2}

To get the students' attention Rey initiated the utterance with "okay," with power that was above his average during this event (10.5 μwm^{-2}). The student comment at turn 02 is probably directed to the discussion in Event 1 about how to benefit from three extra teachers and whether they were of value. The pattern in turns 03–06 is consistent with the initiate-respond-evaluate (IRE) chain observed in traditional science classes (Lemke 1990). At turn 03 Rey commenced an utterance with high power and as the utterance progressed it diminished in power. Rey used above average power when he wanted to emphasize a correct answer (e.g., three right?) or get someone's attention. His affirmation of the correct answer in turn 06 had lower power and was a structure that afforded others getting involved – a sign that Rey had completed his turn at talk.

TROUBLE BREWING

Rey selected Kelly to answer a question "because she said she understood." As Rey called her name most of the class laughed. The initial exchange between Rey and Kelly was loud but good-natured. Rey jokingly remarked that Kelly was just the first to be selected in this way and that others would follow – the implication was

that Rey would call on others who did not have their hands raised. Event 3 involving Kelly's expression of annoyance, provides insights into what was to become an altercation.

Kelly reacted aggressively to Rey asking her a question. She remarked, "Why you picking on me for? You see 20 hands and yet you pick on me." As she delivered her utterance Rey overlapped the words "on me for" with his own utterance "stop rubbish."

Event 3

Turn	Speaker	Text
01	Kelly	why you picking { 0.4}
02	Kelly	[on me f { 0.7}
03	Rey	[stop rubbish { 0.7}
04	Kelly	=or { 0.5}
05	Kelly	you see 20 other hands up and yet you pick on me. { 2.7}

The entire episode had power in the air of $9.4 \mu\text{wm}^2$. In Event 3, turn 01 contained most power at $39.7 \mu\text{wm}^2$, turns 02–03 averaged $15.6 \mu\text{wm}^2$, and turns 04–05 averaged $7.5 \mu\text{wm}^2$. That is, power diminished as Kelly's utterance progressed. Looking more closely, the first two words that began the initial turn at talk had most power – "why" at $68.7 \mu\text{wm}^2$, and "you" at $61.6 \mu\text{wm}^2$. Hence, Kelly began loudly and then the power in the air trailed off to less than the average for the entire event. Possibly the diminished power was attributable to Rey's exhortation to "stop rubbish" or perhaps it was because of the effort needed to sustain a turn at talk at such a high power level for more than just a short time. It is plausible that Kelly did not want to convey too much anger in her delivery for fear of the consequences.

Interpretively, what we experienced was that Kelly spoke with emotion, using synchronous gestures with the left hand, head movements, and cadence of her utterance. The emotional content of her actions involved more than prosody and included her body movements as well. Other students' actions appeared to be entrained with the unfolding structures associated with what might initially be considered a playful joust between Rey and Kelly. Notably, Amber was giggling as Kelly spoke and Cindy, the female immediately in front of Kelly, turned and smiled encouragingly when Kelly raised her voice, indicating her frustration at being called on when she had not volunteered to be involved.

Rey continued to teach the class how to change units from centiliters to milliliters. As he spoke about the task he was doing he expressed his annoyance with Kelly (see turns 01 and 03 in Event 4).

Event 4

Turn	Speaker	Text
01	Rey	I can't believe this ah girl doing this ah ((laughter))
02	Kelly	although.
03	Rey	I don't believe
04	Female	[ha. ha. ha ha ((laughter)) {0.6}
05	Rey	=very many ((laughter)). I dunno ((laughter)) how big a unit? ((laughter)) A milliliter? (0.4s) ((laughter)) {0.4}

In less than the 10s it took for Event 4 to unfold there were six instances of individual and collective laughter. It is possible that this laughter, some of which was intentional and some of which seemed like involuntary responses to others laughing at the risky nature of the unfolding events, contributed to sustaining a shared mood of playfulness that became an affordance for Kelly's response to being called a "rude student." Furthermore, the sixth laugh, from a female sitting next to Kelly, may have acted as a resonant structure for Rey's next utterance. Although the laugh had only power in the air of $2.3 \mu\text{wm}^{-2}$ and short duration, as it occurred it sounded shrill and was separated from Rey's previous utterance by a pause of 0.4s.

Following the sixth laugh the following interaction occurred between Rey and Kelly.

Event 5

Turn	Speaker	Text
01	Rey	you're such a rude student.
02	Kelly	oooo. you have every nerve to call me a rude student when you have twenty million hands in the air {5.3} \12.9 μwm^{-2} \
03	Rey	excuse me. [That's what you're doing {1.9} \30.5 μwm^{-2} \
04	Kelly	[just say you
05	Kelly	come on. I won't say I'm sorry. I won't take your class.
06	Rey	=temp, temp, temper ((Kelly overlaps this turn of talk with indecipherable words))

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07 Rey temp, temp, temper. that's what you are doing.
 temp, temp, temper.
08 Kelly exactly ((class giggles))
09 Rey ((mimics)) you said exactly. temp, temp,
 temper ((prolonged class laughter))

The altercation continued for about 25s and the power of sound in the air was $25 \mu\text{wm}^{-2}$, well above either Rey's average or the class average. Rey and Kelly both uttered words and phrases that exceeded their average power in the air. For Kelly the most notable was: "Oooo. You have every nerve to call me a rude student when you have twenty million hands in the air (5.3s, $12.9 \mu\text{wm}^{-2}$).” This utterance was relatively lengthy and above the class average power in the air for utterances ($9.4 \mu\text{wm}^{-2}$ which included the teacher's talk). The evidence that the verbal exchange was heating up is the relatively high power in the air of words and phrases.

Kelly's utterance of exactly (0.6s, $9.6 \mu\text{wm}^{-2}$) was followed by Rey's sarcastic remark, "she said exactly. Temp. Temp. Temper" (2.0s, $9.9 \mu\text{wm}^{-2}$). Kelly and Rey uttered the two syllables of exactly with similar duration, 0.2s (eggs) and 0.4s (sactly). Rey injected more energy into the first syllable, using intonation to provide a sarcastic lilt. The word exactly followed the phrase "she said" (0.3s, $7.4 \mu\text{wm}^{-2}$). The power in the air of "she" (0.2s, $1.5 \mu\text{wm}^{-2}$) was far less than "said" (0.1s, $21.7 \mu\text{wm}^{-2}$). Rey began his utterance relatively softly, inserted more power into "said," and then mimicked "exactly." Rey's taunting of Kelly during the interactions may have been intended to show he was in control and unafraid of Kelly's verbal tantrum. Prosody, facial expressions, body orientation, and upper body movements conveyed the idea that Rey was taunting. It was as if he dared Kelly to "bring it on. Give me your best shot."

Kelly's tone was accusing and disrespectful and Rey's words were taunting. The students appeared to laugh at the scenario in which Kelly stood up to an authority figure and used words and prosodic features that would land her in trouble with school administrators. Some students seemed to use laughter to goad Kelly into escalating the altercation while others laughed collectively at the risky and unusual circumstances of both actors, whose actions violated the norms for teacher-student interactions. A high pitched giggle by the girl next to Kelly (also the perpetrator of the sixth laugh in Event 4) seemed forced and intentional – with the possible goal of encouraging Kelly to prolong and escalate the angry exchange with Rey.

POSITIVELY VALENCE EMOTIONAL CLIMATE

Because of Rey's anger following the science lesson, which occurred in the morning, he was anxious to schedule cogen. He invited three students who had participated regularly in cogen to be involved. The three were buddies, Amber the

leader, and Kelly and Cindy, two peers for whom Amber assumed responsibility. Two new teachers from Lehman College, who were coteaching with Rey agreed to begin cogen while Rey finished packing up after the completion of the science class. Accordingly, the initial part of cogen took place without Rey being present. Only one of the coteachers, referred to here by the pseudonym of Felicia, was actively involved. Felicia, an African-American, was in her third year of undergraduate study, and close in age to the three female participants from the class. The other new teacher, a white, graduate student, was older than the other participants and did not participate orally in cogen.

BUDDY SYSTEM

In an effort to adopt collaborative approaches to teaching and learning Rey devised a buddy system in NYH's second year. Students identified buddies to whom they would provide academic support. The buddy groups operated across the classes to which they were assigned for science. Amber, Kelly and Cindy were a buddy group from the same science class. Among the roles of buddies were to encourage peers in their group to come to school on time, turn up to class, participate actively, and do their homework. Also, they acted as advocates for those who were in their buddy group.

Event 6 is based on 15.5 seconds of cogen. Although one of the students, Amber, spoke for most of the time, Felicia provided encouraging remarks, usually by overlapping Amber's speech. Kelly only spoke toward the end of the segment, describing Rey's emotional state as "crazy as hell." Cindy, affirmed her description, portraying Rey's emotion as cranky. In turn 10 Cindy and Amber showed empathy when they commented "down" (power in the air of $0.2 \mu\text{wm}^{-2}$) after Felicia had stated, "really" (power in the air of less than $0.1 \mu\text{wm}^{-2}$). Use of the word down is evidence of the students' entrainment as they spoke in unison. The meaning of down is ambiguous since it might be a sign of agreement or they may have been describing their teacher's emotional state (i.e., as depressed). At the moment of utterance the students did not have eye contact, were not looking at one another, and the emotional climate was somber.

The first event from the cogen reflects a shared mood of serenity. The power of the sound in the air was relatively low throughout the entire segment with an average of $0.4 \mu\text{wm}^{-2}$.

Event 6

Turn	Speaker	Text
01	Amber	But um (0.4) we not bad we just
02	Felicia	[No::
03	Amber	[like

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04	Amber	loud and (0.4) we like t[o
05	Felicia	[express
06	Amber	=yeah and I mean when Mr. Llena' s like (1.1) like when he' s teaching
07	Kelly	=he' s crazy as hell
08	Cindy	=yeah he' s been cranky lately
09	Felicia	really (0.3)
10	Cindy & Felicia	down

Turns 02 and 03 overlapped with Amber uttering “like” as Felicia began to say “no” – uttering the n and just beginning the “oh” part. When Amber finished saying “like,” Felicia was half way through saying the word no. F_0 was 175 Hz – that is, Felicia spoke softer and lower than Amber and her speech had a calming effect on the environment. At turn 05 Felicia completed Amber’s sentence, showing entrainment with her. She uttered the word “express” in 0.6s. The power of the word in the air was less than $0.1 \mu\text{wm}^2$. When Amber finished uttering “to” she completed the utterance at 189 Hz and when she commenced with yeah, she began at 230 Hz. The higher frequency was heard as increased emphasis.

Turns 09 and 10 suggest that Felicia was emotionally neutral, evidence being a virtually flat intonation of “really.” The average frequency was 178 Hz. A relatively flat pitch trajectory and a downward sloping end to the intensity curve conveyed a sense of low key and matter of fact – emotionally neutral. Given that Felicia was a teacher and the students had just described Rey’s emotional state using colorful language it was not surprising that she would try to suppress emotions in a short, low power turn at talk.

In Event 6 the relatively lengthy pauses within utterances of 0.4s and 1.1s were not resources for a change of speaker. This may reflect the rules of cogen, to share turns and time of talk and it definitely was consistent with the low stakes dialogue that was unfolding. The participants were willing to listen and were not competing for turns at talk. In all instances of change of speaker there was virtually no pause between speakers. It was as if participants anticipated the completion of an utterance and began to speak without a need for a pause. This was an example of entrainment and cultural fluency. As the Event unfolded the students, who were in the frame of the camera, showed entrainment in terms of head and upper body movements, eye gaze, facial expressions, and gestures.

RESPECT, TRUST AND SOLIDARITY

Although Felicia was a new teacher, she showed the benefit of being African-American and relatively youthful. She understood the centrality of respect and used the term as she described how she perceived these students. Kelly inadvertently turned on a water faucet affording Felicia’ comment: “it’s okay. You can mess around.

It's fine. It doesn't reflect on how you guys truly are on the inside." The utterance took a little over 5.2 seconds, at a very low power in the air at $0.2 \mu\text{wm}^{-2}$, and mean pitch of 206 Hz. She continued, "cause you guys, you know, on the outside people would say like you guys are disruptive blah blah except that you guys are just peeped as kids, students actually, and just want to express themselves right? So, if someone says something disrespectful to you, you're just going to come back at them."

Felicia asked the students, "so tell me, during class today, what was ... what was going on?" In the moments that followed Amber spent a considerable amount of time explaining how Rey paid a lot of attention to her during class time. There were contradictions. On the one hand he told her she was his favorite student, and on the other hand she was frequently involved in trouble. Amber used colorful language to explain how in class today, Rey "spazzed a little" and after she told him to "calm down! I am listening," he praised her for being a good student. Amber remarked that she informed Rey that it was difficult for her to hear what was going on because there were other people "talking and screaming." In response to some short questions from Felicia the three students discussed whether Rey "picked on them." Kelly noted that, "he never picked on me in his life." This was salient because when Felicia asked "what happened in class today?" she was referring to the altercation between Kelly and Rey. Amber and Cindy acknowledged that it was rare for Kelly to be picked on, joking that Rey usually picked on Amber.

Kelly and Cindy also identified fairness as an issue. They described a contradiction associated with a student whom they implied was involved in cogen and research because of what she could get out of it. The insinuation was that there was something underhand going on – something that insiders knew about and acknowledged with eye contact and knowing smirks. In making this claim there was evidence of solidarity through collective laughter and non-verbal entrainment. Although Kelly wanted to pursue the issue further, Amber wanted to move on. Both accomplished their goals through overlapping speech and Kelly was encouraged to say what was on her mind by short affirmations, such as "wow!" from Felicia. According to Kelly and Amber, during cogen sessions the student they thought was treated with favor identified inappropriate practices from the class, and then when she was in class she spoke continuously and disrupted others. They noted that whereas Rey picked on some disruptive students, he allowed this student to act inappropriately without reprimanding her. The students did not condone Rey's perceived bias and regarded his practices as unfair, reducing their motivation to try hard to succeed in his class.

Speaking calmly, softly, and with self-assurance, Felicia showed a deep understanding of the culture of the youth participating in cogen. She listened attentively, commented affirmatively, and maintained prosody that was non-threatening to any of the participants. In keeping with the goals of cogen she provided spaces for participants to say what was on their mind, identify contradictions, and make suggestions about what was wrong, what was right, and what might be the case if changes were made. The students discussed the science class, the ESL teacher, and Rey, but did not stop there, discussing many teachers and school administrators as well.

Even though Amber monopolized the amount of talk and turns at talk the other students were involved with occasional short utterances and a considerable amount of synchrony in terms of their upper body movement, gestures, eye gaze and eye movements, and frequent bursts of collective effervescence, usually laughter – providing evidence for a shared mood. For the most part there was mutual focus and the participants stayed with issues until there was consensus. Most likely the five females would have accomplished even more if Rey had not entered the room directly after the discussion about favoritism.

ANGER AND DIALOGUE

Kelly looked back toward Rey who entered the room and she commented: “Hello. Why you so cranky? Why you so cranky?” The three-part utterance occupied 4.4s and had power in the air of $0.1 \mu\text{wm}^2$ and average F_0 of 299 Hz. Rey’s response was slow paced, measured, and emotional. He remarked, “I’m sick for like since last week and the more the more people aggravate me, I become sick.” During his response Cindy made an effort to show empathy when she remarked after the word week, “so that’s when you...”

The first part of Rey’s explanation had more power in the air than the second part, $7.3 \mu\text{wm}^2$ compared to $3.6 \mu\text{wm}^2$. F_0 for the first part was 162 Hz compared to 152 Hz for the second part. In each case there was an emphasis on the word sick. The first utterance of “so sick” (0.3s) was shorter and had more power in the air ($1.4 \mu\text{wm}^2$) compared to the second utterance (0.5s, $1.0 \mu\text{wm}^2$).

When Rey finished the second utterance there was a pause of 0.5s, which was broken when Kelly made a lighthearted comment “then smack them.” The remark could be interpreted as an effort to infuse positive emotions into an environment that was negatively charged. Perhaps she sensed Rey’s anger and tried to defuse it with a joke. As she spoke she gestured with her right hand, turned her head toward her peers, and smiled. Entrainment followed immediately but was short lived. Without a discernible pause Cindy laughed audibly for about 0.6s, Amber also laughed simultaneously while suppressing its intensity by moving her hand across her face, and Felicia laughed, but not audibly. The collective laughter had relatively low power in the air of $0.5 \mu\text{wm}^2$. Rey continued to speak with emotion and uttered what sounded like “Yaa” with power in the air of $8.8 \mu\text{wm}^2$. Not surprisingly, Rey’s relatively high-powered utterance switched the emotional valence back to negative – the “low powered” use of humor and laughter were insufficient to sustain a switch in the valence from negative to positive.

Two social categories – gender and age served to bring Felicia and the three students together and to “other” Rey. While not determining factors, the culture associated with social categories such as age and gender continuously unfolded structures with which those who identified with those categories could resonate, show synchrony, and create instances of collective effervescence. Given several bases for similar histories it was not surprising that foundations were laid for

producing solidarity, reaching consensus, and interacting adaptively with one another. On the other hand, the same categories for Rey were sources for producing cultural difference and maladaptive practice. In these circumstances it was easy to see how social trajectories would favor othering and that effort would be necessary to reverse those trajectories to produce a higher order of solidarity that embodied the acceptance of difference.

TAKING A STANCE

Rey used cogen to present the rules for speaking in the classroom. Event 7 provides a basis for further exploration of the flow of emotions in cogen.

Event 7

Turn	Speaker	Text
01	Rey	You see you see what happens. You know me, when I want to explain, I want people to listen. When I speak nobody speak. { 9.7} (0.5s) ((Students endeavor to speak, but Rey continues))
02	Rey	there' s one way. one. mine.
03	Many students	there' s a ...
04	Rey	when I caught. One at a time ((all students speak in opposition to what Rey is laying out. e.g., "How can you say that?" The group, including Felicia, smile "knowingly" as if to say "but of course it would be <i>your</i> way.")) (0.5s)
05	Rey	when I caught ah Kelly talking ...

What followed was a series of exchanges in which Rey maintained a stance of setting out the rules to establish that he was in charge and when he spoke others should pay attention and learn from him. His standpoint was consistent with the idea that there was one official teacher who had the responsibility to control the class and maintain a "one speaker at a time" learning environment. The three students wanted to discuss specifics, some of which arose earlier in cogen when Rey was not present – that is, inconsistency and favoritism. Also, when Rey invoked Kelly's name and referred to the dispute that arose during the lesson, Kelly began to defend her actions.

Kelly spoke for approximately 30s in an explanation of what she considered to be inconsistency. She argued that Rey's actions were not just and noted she was picked on because she asked her nearest neighbor whether she understood how to do the conversion of units. Her explanation pointed out that others were rowdy and some, in the presence of Fereny, were listening to electronic music via an iPod – a clear violation of class rules. At the beginning of Kelly's monologue she was supported, via overlapping speech, by Amber's remarks on Fereny's inconsistency. Toward the end of the time Rey interjected and, after a period of overlapping speech, he prevailed and Kelly sought to make points in the interstices of Rey's talk. The power of the wave in the air during Kelly's utterance was $0.5 \mu\text{wm}^{-2}$ and the average F_0 was 276 Hz. Rey had the goal of establishing rules and ensuring they were accepted within the group and the students wanted to point out that he was inconsistent in enforcing existing rules and appeared to have favorites.

From the perspective of cogen, Rey spoke more than the students or his coteachers – who did not speak at all in this segment. Felicia showed considerable solidarity with the three female students, an interpretation that was consistent with the manner in which the first part of cogen was conducted. It was apparent from the earlier parts of cogen that the students shared empathy for Rey's well-being and what was later called crankiness and anger (e.g., spazzing out). As the cogen progressed the student utterances seemed to change in purpose from showing empathy to producing solidarity and then to contesting the reasonableness of Rey's actions earlier in the day. Initially, Amber spoke for Kelly, but soon the "dialogue" became an argument in which there were points and counter points. As had happened in the science lesson, Rey appeared to taunt Kelly when she made a claim about not feeling well (for example).

Rey's anger was at odds with the way in which cogen usually is structured. Indeed, in cogen there was a striking difference in the quality of the interactions that occurred between the three female students and the two female coteachers and those that subsequently involved Rey – where negative emotions were involved. In the first part of cogen we analyzed, positive emotions and a serene shared mood was an affordance for relaxed chains of interactions that produced entrainment, synchrony, solidarity, and success. In contrast, the angry exchanges that occurred in the final segment produced asynchrony, failure, frustration, more anger, and fragmentation. Other emotions such as fear and sorrow might also have been produced during that final segment of cogen.

THE ROAD AHEAD LOOKS PROMISING

Rey noted that his displays of anger have catalyzed different forms of behavior, making it possible for collaborative roles to be enacted and flourish at a later time. While anger has been especially vilified for its presumed destructive effects on individuals and social relationships (Tiedens 2001), Rey believed that anger could potentially boost determination toward effective correction of students' misbehavior,

communication of negative sentiments and redress of grievances. Rey used his deliberate and dispositional anger in the classroom as a “nip in the bud” manipulation strategy to confront direct and indirect actions that threatened individual’s status, self-concept, identity, insults, condescension, and reproach. Aaron Ben-Ze’ev (2000) provides a similar example to Rey’s experience: “A schoolteacher who feels angry with students when they talk while she is speaking believes that their behavior is unjust and depreciates her position in the sense that her authority is undermined.” (p. 380) Studies have shown that the display of anger is likely to be an effective manipulation strategy in order to change and engineer appropriate (desirable) attitudes (Sutton 1991). Anger is a distinct strategy of social influence and its use as a goal achievement mechanism proves to be a successful strategy.

Anger serves to inform, motivate choices and behaviors, define a sense of self, and facilitate social connectedness. The emotion of anger per se is neither positive nor negative; rather, it is simply a subjective, albeit powerful, feeling state (Thomas 2003). Anger mobilizes our energy and resources in service of goal attainment and is essential to energize and organize behavior, for it can serve to readjust and strengthen a relationship. Two people who argue and express anger at each other are apt to experience angry outbursts as distressing and unpleasant in the short run but potentially beneficial to their relationship in the long run (ten Houten 2007). Anger can provide the basis for reconciliation on new terms (LaFollette 1996). Current emotion theorists have generally agreed that emotions were fundamentally adaptive and played an essential role in adequate functioning in the social milieu (Izard and Ackerman 2000). Recent developments in emotion theory have pointed to the universality and utility of anger in human functioning, particularly in its power to communicate grievances and injustice (Tangney et al. 1996). It is in the subsequent interpretation and contingencies, i.e., the behavioral expression of anger, that the constructive or destructive function of anger is manifested.

In the moment-to-moment unfolding of social life there may be instances where authority figures step forward to exercise control over specific individuals or groups of individuals within a field. The benefits of acting in this way might be realized first at the collective level, and only later for all individuals that comprise the collective. In an endeavor for the collective to meet its goals it might be necessary to truncate the autonomy and freedom of individuals who disrupt and breach legitimate activities that define the field – here, the learning of science. It is apparent from these examples that there is merit in thinking dialectically about “control over” and “collaboration with” and ways in which this relationship relates to the quality of learning science.

One week following the cogen Kelly brought her mother to the school for a meeting with Fereny, Rey, and a school administrator. Rey was surprised that the shouting incidents were not mentioned during the meeting. Most of the conversation focused on problems with Fereny, who Kelly did not recognize as legitimate. However, there appeared to be positive outcomes arising from the meeting and agreements were reached on Kelly’s obligation to produce a science notebook that would be ready for grading and to work productively during the science class.

The three youth who participated in cogen advanced from being failing students in February to passing students in June. Rey argued that his anger catalyzed their trajectory out of the slump and fear of failure promoted a strong work ethic. In making this claim he seemed to underestimate the importance of the buddy system that he created, a collaborative arrangement that brought together the three students who participated in cogen. It was apparent during cogen that the three students identified with one another, there was solidarity among them, and their sense of “belonging to” was a structure that afforded their success. They helped one another to be successful, to stay focused, and to take responsibility not only for their own learning but also for the learning of their buddies. During cogen they demonstrated high levels of empathy for Rey, seeming to realize that his state of anger was not normal and that he needed assistance. The students seemed willing to work with Rey and offered good suggestions for improving the quality of the learning environment, identifying contradictions that might be removed through collaborative action, thereby improving the learning environments for all.

As a science teacher in the Bronx of NYC, Rey has access to the culture he developed in the Philippines and new culture that was created and produced by living in the Bronx and being a teacher there for more than a decade. His cultural capital was not static and was not situated in his life in the Philippines. It would not be right to see those cultural reservoirs in terms of deficits. No doubt the cultural capital produced, reproduced, created, and transformed in the Philippines is the foundation for much of the success that Rey has enjoyed as a science teacher in the United States. However, it was also likely that the cultural capital that allowed him to so fluently anticipate and enact appropriate practices in the Philippines might produce some miscues as he taught at NYH. These possibilities are consistent with habitus being enacted as structures, which unfold dynamically in a field – without conscious awareness.

A similar situation arises for youth who have ethnic histories that originate in Puerto Rico and the Dominican Republic. When they experience Rey’s emotional state and enact practices they regard as appropriate, it is possible that what they do is based on a lack of history of interacting with Filipinos to produce success. Even with more than one semester of experience, it is likely that students will misinterpret highly emotional practices associated with body movements, such as gestures, and prosodic features of speech (e.g., intensity, pitch, intonation). Given the centrality of respect in many ethnic groups, and especially among urban youth who have grown up in conditions of high poverty, it is common to interpret cultural otherness as “coming at me.” If a person “comes at” another, it can be seen as an act of aggression or an attempt to earn respect by overpowering an “other.” It is well known among African American youth, for example, that a reliable way of earning respect is to disrespect others, especially authority figures (Anderson 1999). Also disrespect can be accrued by a person, by allowing others to overpower him/her. Hence, it is unlikely that most urban youth will readily accede to being losers in classroom exchanges. On the contrary, urban youth will do what they can to earn

respect of others by being successful in ways that are valued within the collective. This social fact highlights the importance of creating solidarity across different sub groups that comprise a class. For example, in this case there is a Filipino teacher, African American students, and students from the Dominican Republic, and Puerto Rico. Appiah (2006) refers to forging solidarity across different groups as cosmopolitanism. When cosmopolitanism emerges within a science class there is a stronger possibility of negotiating collective goals and agreeing to a division of labor that affords individual and collective success. The vehicle we have used in the past decade or so has been cogen.

Without taking a deficit view of the students' lives out of school, it is worth considering that many have experience in dealing with adults who become angry with and because of life's circumstances. The empathy the students showed Rey in the early part of cogen when he was not present and then when he was present suggest they have had experience in dealing with angry adults and perhaps angry adolescents as well. For the most part speakers did not speak over others, in the sense of using higher intensity and power in air. As Roth and Tobin (2010) showed, the youth knew how to cool the furnace of anger, by speaking "under" an angry speaker. It is worth considering that they knew how to inject humor, how to laugh in ways that would not be regarded as disrespectful, and how to tailor prosody to create and produce positive emotions. We regard it as a priority to learn more about the cultural capital of urban youth and the extent to which they can deal with anger and social violence in a variety of fields, including science classes and associated cogen.

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ASHRAF SHADY

14. THE ROLE OF CULTURAL ALIGNMENT IN PRODUCING SUCCESS IN URBAN SCIENCE EDUCATION

Abstract This chapter highlights my experience as an immigrant science teacher during the school year of 2006–2007 in a low–academically performing middle school in New York City. I experienced didactic difficulties because I lacked the cultural awareness necessary to produce positive teaching and learning environment. Accordingly, I used cogenerative dialogues to improve teaching and learning in my classroom. The results of the study indicate that because of participation in cogenerative dialogue the students and I learned the importance of shared responsibilities on acquiring new identities that supported science teaching and learning. We learned how to communicate effectively across differences that often act against success in the classroom, including social class, ethnicity, gender, and age.

THE CHALLENGES OF TEACHING IN DIVERSE URBAN SCHOOLS

According to the National Science Research Council (1996), all students should have the prospect to achieve high levels of scientific literacy, but the reality is, many urban schools do not meet this ideal. Students' performance in school is an intricate process that is structured directly or indirectly by macro structures, such as, race, ethnicity, immigration, socioeconomic status, and access to qualified and experienced teachers. Reflecting back on my experience in New York City (NYC) public schools, I discovered first-hand how the cultural and socioeconomic differences play a role in mediating the outcomes of teaching and learning in science education. The research described in this chapter, is an auto-ethnography detailing my experience as an Egyptian immigrant science teacher in an eighth grade inclusion class, in Astoria Intermediate School (all names mentioned in this chapter are pseudonyms, unless mentioned by the author) in Queens, NYC during the school year 2006–07.

The school

According to the school report card, the demographics of students in the school were 52% Hispanics, 22% Asians and Pacific Islanders, 19% African Americans (under this category also fell students of African origin, and students of African origin from the Caribbean islands, such as, Jamaicans), and 7% White. The gender breakdown was 51% males, and 49% female, which is a typical gender composition of most

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urban schools in NYC. The annual attendance rate for the school was about 80%, which is below the NYC public schools' average of 90%. Students' stability as of 2006 was 92%, which was below the city average of 94%. The average class size in the school was 28 students. During the school year 2006–07, the school qualified for Title I designation, because most of the students came from conditions of economic hardship. This classification provided extra funding from the federal government that was used by the school administration for after school programs, and to lower class size among other things.

My experience as a science teacher

My teaching experience in Astoria Intermediate School has been structured primarily by my experiences as a learner in the science field. I taught science in a teacher-directed approach, which did not appear problematic at first. During the first few years of my teaching, I was assigned the top classes where my students worked to meet the learning objectives set by me. I relied on extrinsic motivations, such as, giving my students grades and rewards as a process of inspiring them to complete work. Most of my students in these classes took the advanced Earth Science Regents course, and on average, they had a passing percentage of about 80%. Reflecting back on this experience, I could attribute my success to the demographics of these classes. The majority of the students in these classes were first generation Asians, Pacific Islanders, and White immigrants who learned in their homelands in a teacher-directed approach. Accordingly, my teaching practices did not appear to be out of context for them.

The class

During the school year 2006–07, the school administration felt that I could replicate the same kind of results with the other classes, so they assigned me an eighth grade inclusion class (some of the students were designated learning disabled.) The class had 14 students, which is far below the school's average of 28 students. The attendance among the students in this class did not exceed 50–70% on any given day, which is far below the school's average. The students in the class scored either level one, which is far below average, or level two, which is below average on the English Language Arts, and the Mathematics citywide tests in grade seven. The racial makeup of the class was 60% black, 33% Latinos, and 7% white. In comparison to the rest of the school, the proportion of the black and Latino students in the class was relatively high. The students in this class formed camaraderie with their peers in the class that was structured by shared experiences in the class, the school, the street, and Astoria housing project where most of the students lived.

I would describe my experience in this class as difficult; the students inscribed me as culturally "Other". They were disrespectful to me; they made fun of my accent, and even mentioned to me at one point that I must be a terrorist, since I came from the Middle East. These behavior problems exerted a heavy toll on me. I struggled to

find successful strategies for dealing with their forms of cultural enactment. I made the common mistake of reacting to my students' practices, rather than investigating the driving forces behind their responses. I counteracted their actions the only way I knew how, by instituting a zero tolerance policy. Any student who disrupted my class got a call home, followed by a referral to the dean; a policy that was sanctioned by the New York City Department of Education (NYCDOE), and rejected by the students who suffered the consequences. Needless to say, that my zero tolerance policy did not achieve the desired outcomes, the students felt that I was trying to oppress them, and consequently they rebelled. Ken Tobin (2007) notes that conventional wisdom about good teaching has focused on teachers controlling students to keep them orderly, and maintain relatively quiet classes. This myth of control over fosters cultural practices that might be interpreted by the students as disrespectful. When this occurs, struggles for power over can arise, reducing the quality of learning environments, and set the stage for teachers to be judged as ineffective. In order offset such a scenario, teachers need time and face-to-face experiences to adapt their teaching practices to the cultural capital of minority youth across boundaries of age, race, and class.

This cultural misalignment could be exacerbated by macro structures, such as, cultural diversity (Shady 2014). In my case, my lived experiences became a reference point that created an environment filled with instances where struggle for control over ensued between my students and I. As a teacher, I clung to cultural practices that were perceived by my minority students as disrespectful; such as, constantly reprimanding them for not using valid science arguments, or using the inaccurate canonical terms in making their arguments. Although my intentions were to help them make the crossover to the mainstream culture, my cultural practices led to the buildup of negative emotional energy (EE). Randall Collins (2004) contends that when social interactions lead to the development of lack of sense of group membership negative EE can accumulate. The students hated my class, and I dreaded teaching them. The learning environment in the class was dysfunctional. Furthermore, I did not have the tools to construct and maintain a productive learning environment. Like most teachers, I failed to recognize that my students spent years learning a gamut of practices for connecting to the world. These practices may have been efficient in building solidarity with their peers, but incongruent with classroom teaching and learning (for example, making jokes to get attention, or to gain status among their peers.) In any case, these transactions became a well-practiced routine, and I should have taken into account that altering such counterproductive conducts in the teaching, and learning environment would require an individual, as well as collective effort from the participating stakeholders.

FROM PRACTICE TO RESEARCH

Cogenerative dialogue and cultural misalignment

The cultural misalignment between the students in this class and I provided an opportunity for the use of cogenerative dialogue (cogen) as a tool to produce practices

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and schemas that are conducive to a successful learning environment (Tobin 2014). As a teacher-researcher, through participating in cogen, I got to identify which instructional practices were conducive to productive learning environment, and which ones were not supportive of teaching, and learning in my science class.

Initially, I did not use cogen for research purposes, but with the goal of improving the learning environment. As I discussed the challenges that I encountered in the class with Ken Tobin, he suggested that since cogen was part of my usual professional development routine, I should start doing research in my classroom to ascertain if and how it was making a difference to the teaching and learning of science in my classroom. My research goals focused on developing a better understanding of teaching and learning, and using what is learned to create and sustain an enhanced learning environment. Since the research involved human subjects, the students and their parents or guardians had to give their permission to be video, and audio recorded using the standard consent, and assent forms employed by the NYCDOE. My perspective on obtaining approval for undertaking research with human subjects was guided by the Belmont report (1979), which is entitled “*Ethical Principles and Guidelines for the Protection of Human Subjects of Research*”, and “the authenticity criteria” advocated by Egon Guba and Yvonna Lincoln (1989). The Belmont report addressed three general principles: respect, beneficence, and justice, and emphasized that research should respect human participants by maximizing their autonomy to make choices about their participation, that there should be a balance favoring the benefits associated with being involved in the research compared to the harms from being involved, and that research should maintain high ethical standards, especially in regard to social justice.

Selection of participants

The participating students in the cogen were chosen purposefully based on the contingent selection process advocated by Guba and Lincoln (1989) in *Fourth Generation Evaluation* to obtain diverse perspectives on teaching and learning. During the first semester, the cogen team included me as a teacher-researcher and two African American students who acted in the capacity of student-researchers, Star and Steve. The number of participants increased during the second semester. In the selection of the students, I did not use random selection; I used a process that involved the use of ontological opposites. Star is an African American female, who struggled academically in science, and the other subjects. She tended to be confrontational, and physically aggressive. Consequently, she was suspended more than once during the school year 2006–07. Having selected Star, I then selected Steve, who was as different from Star as possible. Steve is an African American male student, whose academic performance fluctuated, depending on his moods. He experienced periods of extreme emotional and physical withdrawals, where he would put his head down, and refuses to participate in class discussions. Both Star and Steve, lived in the Astoria housing project, and experienced socioeconomic hardships. The cogen team met during the

lunch periods, or after school every Monday to plan for the coming week, but we also met during the week in the same times, if we felt that there was need to meet. During cogen, I made every effort to remove any spatial configuration that tended to produce power differentials. For example, during our meetings I sat next to the Star and Steve rather than at my desk. I started my meetings by clearly stating the rules, such as, no one voice is privileged, and respect among the stakeholders should be prevalent at all times.

The research utilized the experiences, knowledge, and practices of the student-researchers to help inform and improve the learning environment. The use of students as researchers provided a way to obtain their perspectives on what was salient in terms of school, teaching, and learning, as well as innumerable other issues. Having collectively identified foci for research, the student-researchers provided insights into what was happening in the classroom and why it was happening. Their roles varied between identifying, critically discussing, and analyzing video clips that were salient to our research, and interviewing their peers.

METHODS

Tobin (2006) contends that much of the research in urban education is premised on deficit perspectives of the school system, the teachers and the students. Accordingly, to counteract the possibility of adopting such a standpoint, when I faced mounting resistance from my students I resolved to undertake auto-ethnography to learn from my own efforts to teach science in urban schools, and autobiography to explicate my understanding of my own biases. Before I learned how to be an effective teacher I had to learn how to communicate successfully with my students across social categories, such as, age, race, ethnicity, and social class. I had to understand their ways of making sense of the world. I had to demonstrate to my students that I could teach them in the ways they expected to be taught, and that I would be helpful to them, not only in science but also in dealing with life's problems, I had to convince them that "I got their back."

The research focused on studying teaching and learning of science in two fields: the science classroom and the affiliated cogen. The broad research questions were: How did participating in cogen structure the practices of stakeholders? To what extent is the culture produced in cogen enacted in the classroom and vice versa? How did participation in cogen improve cultural adaptivity among stakeholders? What roles do successful face-to-face interactions play in fostering solidarity in the classroom? How did participation in cogen improve science achievement?

Dialectical dynamics

Throughout this study, I employed a dialectical framework in which dichotomies are avoided, and relationships among social categories are theorized as constituting a whole in which constituents, such as, agency and structure presuppose one

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another's existence. This standpoint was informed by the work of critical educational researchers, for example, Henry Giroux (2001), who argued that human agency and structural features should not be dealt with as a dichotomy, because that would repress either individual autonomy, or structural determinants, such as, race, ethnicity, and meritocracy that exist outside the immediate encounter of human actors. Structures mediate what individuals do, but they are not deterministic since, if actors exercise their agency, which is their ability to act, they can alter structures using them to pursue their own goals. Some practices tend to reproduce structures and other practices tend to transform them, hence as culture is produced it is simultaneously reproduced, and transformed. I also focused on the dialectical relationships that are central to my research, such as, the unfolding production of teaching|learning, practices|schema, individual|collective, and goals|motives. In this chapter, I follow the suggestion of other researchers to use the Sheffer sign “|” for producing theoretical concepts consistent with a dialectical approach, where each part presuppose the other (Roth and Lee 2004).

Data sources

Since my approach to this research was interpretive, I started my data analysis by answering two main questions, namely, what is going on here? Moreover, why is it happening? (Erickson 1986) In doing so, I was guided theoretically by Sewell's (1999) theories on culture, whereby culture is enacted as patterns that have thin coherence and associated contradictions. I drew on a variety of qualitative research methods that are appropriate to the research foci, including authentic ethnography, and conversation analysis using the conventions employed by Tobin and Llana (2014). I also, asked the participating students in the cogen group to provide daily narratives about their activities, inside and outside the classroom, to provide evidence for the existence of practices and schema from other fields, such as, home and school into the cogen sessions and vice versa. In addition to field notes, we videotaped, and audiotaped the class and cogen meetings.

The inclusion/exclusion of what is considered salient data was informed by the research theoretical expectations (Hall 2000). For example, the cogen team picked vignettes that highlighted instances where the dialectical relationships of agency|structure, and individual|collective were in existence. Accordingly, data collection was theory laden, and recursively connected to teaching and learning. A stationary camera with wide-angle view with an open audio source sat above and behind the cogen group; this technical arrangement afforded the cogen team the chance to have contextual meaning of utterances during our conversations. The choice of captured stills from video clips relied on the context in which it was taken. Such as, in instances where we felt that I taught using a teacher – directed approach the still reflected that by focusing on me without the learners. If my teaching approach represented an interactive activity with the learners, the still reflected this by including the students as well in the frame carrying on the activity. The analysis

of the video vignettes became reference points for discussion for the cogen group around salient relations, such as, students' perspectives on the curriculum as taught and the curriculum as enacted by students.

All relevant videotapes were digitized to make them available for analysis using iMovie, and QuickTime Pro. The software allowed the research team (cogen group) to slow down, or speed up the recorded frames, to capture interactions at the micro-level that might have been overlooked in real time (meso-level). The cogen group viewed the videotapes, both individually and collectively, with the intent of capturing the most salient episodes to our emerging questions. As a team, we made sense of the data collected by analyzing individually and collectively at multiple levels to understand and generalize our findings.

THE WATER FIGHT

In the following section, I investigate how cogen served as a social field where participants lived experiences was reproduced, and transformed as they were enacted in the cogen field. Like most teachers, I felt that I had to cover the materials on the New York State Science exam, so I utilized the pedagogical method of backward design that begins with the end in mind; as a teacher, I started with what understandings I wanted my students to develop. In this instance I wanted to introduce the role of variables in experimental design, which is part of the major understandings in the New York State Learning Standards. In accordance with my usual practice, I discussed the lab in advance with Star, and Steve. One of the ideas that I suggested to the group was the penny-lab. The objective of the lab was to introduce the process of isolating variables in a controlled experiment. I asked students to find out how many drops of water could a penny hold. Through data analysis, the students had the opportunity to identify variables that might influence the number of water drops. For example, the size of the dropper, the distance between the dropper and the penny, and the force applied to the dropper.

As the bell rang, signaling the beginning of the period, the students came into the room. I explained the lab and asked them to proceed. About 10 minutes into the lab, Star started splashing water into Dre's eyes (classmate); he reacted by splashing the water back into her face. Within few moments, the whole class ended up participating in a water fight. All my attempts to stop the ensuing chaos were futile, so, I just sat at my desk fuming, contemplating how my student researchers, out of all the students, could have done this to me; I decided to address the incident right after class, so, I asked Star and Steve to come for a cogen session. My intentions were clearly to address the preceding mayhem, and to make sure that this situation was not about to repeat itself. As the cogen session started, I couldn't help but approaching the situation in an indirect manner (in Egypt, it was customary in my family to tackle variances indirectly, rather than head-on.) I decided to inquire about Star, and Steve's classwork, and life in general hoping that I might find a cue of what had led them to act in this manner. I started the meeting by asking Steve about his progress

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in science. At that point, I knew that he was not doing well from the work that he had been turning-in. To my surprise, Star interjected and said no, actually, he does his work, and Steve agreed with her. I was disconcerted. How could these students look at me with a straight face and tell me that everything was OK? In attempting to reflect upon what happened, I referred to the video clip. In Episode 1 and in subsequent fragments I refer to myself as Shady, which is my last name.

Episode 1

Turn	Speaker	Text
01	Shady	so Steve↓ (1.3) there are couple of things that I want to talk to you about::first of all, I noticed that after being interested in science, (1.5) lately you have been having your head down again, and not paying attention. (1.7) is there any reason behind that?
02	Steve	{2.8} h::mm((Steve is looking at Star, and smiling))
03	Shady	((I turn my head towards Star and direct the question to her))↓have you noticed that?
04	Star	=noo↑((she looks at Steve, and smiles))
05	Shady	=the reason I am saying this
06	Star	[he do do his work↑
07	Shady	((looking at Steve)) so:: you think you' re doing better now?
08	Star	[better::I think so↑ ca:::use he usually say sure, good when he does his work
09	Shady	((Looking at Steve))=so::how are you doing in your other classes?
10	Steve	huh?↓
11	Star	=b↑etter
12	Shady	((I turn around and ask Star)) is he doing better?
13	Steve	=I don' t know
14	Star	[I think so↑

This episode is about one minute into the vignette; its effect is one in which Star managed to appropriate speech patterns, such as, pauses, and sound pitch as resources to meet her goals of getting Steve on her side. This became apparent through her interjections, with the associated higher pitch in her immediate talk (turns 4, 6, 8, 11, and 14.) As the meeting progressed, negative emotional energy

started to build up. I used interrogative speech patterns, such as, is he doing better? In turn 12, that positioned the participants on the defensive. There was a clear cultural misalignment represented in disproportionate turn taking. I spoke for longer turns than the other participants, and more often (6 turns out of 14.) About 4 minutes into the conversation, I decided to switch the topic from talking about Steve's progress to discussing Star's progress with the purpose of getting a hint into what happened during the previously mentioned penny-lab. Although, my intentions were to focus on teaching and learning, but because social fields have no boundaries, (Tobin and Roth 2007), the conversation drifted towards Star's home life. In episode 2, Star mentioned that she has been acting out as a result of being physically, and emotionally abused at home.

Episode 2

Turn	Speaker	Text
1	Shady	how about you Star? what is going on?:: you have been driving me crazy lately { 2.3} ((Star is looking down at her hands))
2	Star	everybody↓ { 2.3} ((Star is not responding, and still looking down at her hands))
3	Shady	what's going on?↓(1.3) do you want to tell me about it?↓(1.5) are you upset at something?
4	Star	h::mm(0.9)
5	Shady	are you upset with something that I need to know about? ↓
6	Star	i was↓(1.5)
7	Shady	at me or at something else?
8	Star	[something else↓
9	Shady	[and you decided::to make me pay the price? ↓
10	Star	[nooooo::everybody pays the price (0.9)
11	Shady	what is the matter? tell me↓(0.3)
12	Star	it is my mother::: she went after me with a baseball bat.

In episode2, which followed episode 1 directly Star responded to my questions about her conduct in a fading voice. During this episode she managed to control the conversation by utilizing the pauses during and between turns as resources (turns 2, 4, 6, 8 and 10). I continued to speak for longer turns (1, 3, 5, 7, and 9) than Star. As the conversation continued, I began to feel weary. I promised my students that what

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happens in the cogen meeting stays within the group, but at the same time, under the *Child Abuse Prevention Act* of 1985, I was a mandated reporter. I asked Star if she reported the incident to the proper personnel. She said, “no.” At that point, I felt the importance of what happened in the penny-lab diminish in comparison to what she had told me. I encouraged Star to report the incidents of abuse to the guidance counselor. The guidance counselor and the principal in turn reported the incident to the proper authorities based on Star’s report, and *The Children Welfare Services* investigated the situation in her home and opened a child abuse case, placed Star in a foster home where the mother was not allowed to get in touch with her while the case was being investigated.

In a subsequent meeting, I asked Star to write afterwards why she shared her home situation with me. She wrote, “I felt good about telling Mr. Shady what had happened because I felt like I can trust him. He is the only teacher I can talk to about my life and how I feel when I am in the house. When I spoke to Mr. Shady I felt good, relieved.” Reflecting back on this cogen session, the initial development of negative EE in episode 1 of the meeting was the result of me trying to establish a power differential to meet my goals of reprimanding my student-researchers. The students perceived these cultural practices as disrespectful. My transactions lacked fluency (they were not timely, anticipatory or appropriate). I took on the role of a teacher whose students had failed to meet his expectations. This standpoint led to the production of power disparity, thus supporting the development of negative EE that lasted throughout the cogen. For example, during the cogen Star and Steve avoided my eye contact, and stared either at each other, or at the floor. In episode 2, the home-life became the driving force, as well as an escape route for the participating students from a cogen meeting gone badly. This vignette highlighted the social, cultural differences between Star, Steve, and me. The sociocultural background of the participants played a role in structuring the conversation, and ultimately its demise. My views of social life were positivistic in nature, where if I disagreed with my students one of us is true, and the other is erroneous; one of us is endorsed by facts, I assumed in this particular case that this one should be me. This view fostered an atmosphere where the conversation became a site for struggle.

Anthony Appiah (2006) argues that conversations across boundaries could be burdened by cultural differences. He contends that there are three kinds of disagreement about morals; one when we can fail to share a vocabulary of evaluation; another, when we can give the same vocabulary different interpretations; and when we can give the same values different weights. Each of these problems seems more likely to occur if the argument engages individuals from different cultures. Especially, when the conversation involves “thick concepts”. Appiah states that thick concepts are contextualized; in order to apply a concept you need to think of the act in which word or sentence is used. For example, “disrespect” in order to understand such a concept you need to think of the act that would defy decent behavior. Thus, thick concepts are culturally constructed; with the lack of cultural alignment, these concepts might become originators to variances. One way to mediate such disagreements was to

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adopt a cosmopolitan view of social life that is theorized around differences; one could assume that all cultures have enough overlap in their vocabulary of morals to begin the dialogue.

THE ROLE OF PEER DEBRIEFING

Once a week, I participated in a scheduled meeting of the larger research group coordinated by Ken Tobin at the Graduate Center of CUNY. Usually each participant in the group was involved in his or her own research, and we came together to discuss what we were learning. The purpose of these meetings was to enrich our research through the critical insight of peers. I took my vignette to the research meeting to argue for the ethical dimension of the cogen, and the role of the teacher-researcher when he or she encounters issues that require reporting. Tobin suggested that I would follow the protocol required by the New York City Department of Education (NYCDOE); in addition, I should reconsider my methodology. He stated, “from the vignette it appears that there is a cultural misalignment between you and the students in the cogen group. You came across as a teacher who is about to reprimand his students, the students sensed it, and acted, accordingly, to diffuse your anger. The students in the vignette got each other’s back against you, “as it is apparent in Star’s defending Steve’s academic conduct.” Tobin suggested that I would start with one-on-one cogen, which might be a more appropriate methodology for participants to talk over boundaries of age, race, ethnicity, and social class when they experience a large cultural gap.

RESTRUCTURING COGENERATIVE DIALOGUE: ONE-ON-ONE COGEN

In a commonly structured cogen, multiple realities, voices, and discourses conjoin and clash in the process of coming to know. The tension between being and becoming represent a far greater challenge to students who suffer a difficult socioeconomic status. These students need more fostering, and far more support. This perspective takes into account the fact that individuals are born into structures that either empower, or restrain their agency within a specific social field. Being cognizant of the fact that they are not passive actors, but tactical improvisers who respond to structures in a way that expand their opportunities to succeed. Their deeply ingrained past experiences and the restraints offered by present situations mediate their responses, therefore, constructing their sense of being in the world. As teacher/researcher, it became crucial that I connect with the different cognitive aspects of my students, such as, pain, and suffering. One way of doing this was by reconsidering the design of cogen in order to reflect the realities of the participants. I asked my cogen group for their input on adjusting the design of the cogen (teacher with two, or three students) to one-on-one cogen. The cogen team agreed with me that in most cases we do not generate the learning outcomes that could alter the culture of the classroom into a productive one, because of instances of cultural misalignment, and one-on-one cogen might be a better arrangement.

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One-on-one cogen with Steve

I chose this vignette with the help of Steve and Star, because it highlights an issue that I encountered on regular basis, which is the possible role that race might play in constructing students' perception of what is considered to be a good teacher. On the day of this recording, Steve did not show up to the class contrary to his usual routine, although I had seen him earlier in the hallway. I thought that this might be a good opportunity to start one-on-one cogen with Steve, so, I asked him to come for a cogen meeting. He came to the meeting with a sketchpad, and said that the reason he did not show up to the class was that he went to the art teacher (Ms. Paterson) to prepare his portfolio for the audition for the Arts and Design High School. I was pleasantly surprised, because prior to this meeting I did not know that Steve was such a great artist. In a previous conversation with Steve, he mentioned that the only teacher that the class respected and listened to was Ms. Paterson (an African American art teacher). When I asked him to elaborate further on why he believes this, he mentioned, "Because she is black". His statement disturbed me greatly, because it implied that I might not have a chance of improving teaching and learning in my class, solely because I am not phenotypically black (I came from multiracial background.) In this episode, I decided to investigate the role that race might play in structuring the perception of my students of what a good teacher might look like. The participants in the one-on-one cogen explored possible indistinctness of an individual word or phrase in different contexts.

Episode 3

Turn	Speaker	Text
1	Shady	do you think the color of your skin should determine who you are?
2	Steve	=actually::no but some people judge you that way, because if you are black::you know:: when you watch the movies::when there is a black person in the movie he has to be a gangster or something::every chinese person got to know karate or something::a White person has to be rich
3	Shady	{ 1.3} ((laughing)) yeah::stereotyping
4	Steve	=that is how they separate us especially in the movies::that represent what we are at least in the movies
5	Shady	{ 0.8} ((do you think a black person would have a better understanding of another black person than let us say a White person?

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- 6 Steve =yeah::because they share the same circumstances
7 Shady =maybe you are right::but that is not always true
(0.7) take michael jordan for instance (0.5) he
might have experienced economic hardship at one
point::but his kids grew up in money; probably
they don't know what it means to be poor (1.5)
8 Steve yeah ((looking down at his sketchpad, and goes
back to his drawing))

In this vignette, our roles were reversed Steve was the teacher, while I was the learner. He provided me with an insider perspective on race, and race relationships as macro structures, and how some black students might view other races. This role reversal indicated that one-on-one cogen has the potential of creating a polysemic and polyphonic structure that might have the potential of fostering an inherent respect for diversity. For example, my perception of what a good teacher should look like was different from at least some of my students. Steve educated me about his perspectives on race during the one-on-one cogen, where he felt that shared skin color meant common experiences. I also had the opportunity to explain my view of race, and how social class in my opinion will eventually replace race as the stratifying factor in the American society (Shady 2014).

The one-on-one cogen provided the structural resonance that afforded expanded agency for both of us. It allowed Steve to express his opinions about race without fear of being mocked by his peers, and it provided me with the space and time to get clarification on how race might construct the students' perception of what a good teacher should look like. Although, I might have disagreed with him on the fact that every black person experiences economic hardship, this difference in opinion did not produce negative emotion (turns 05, 06, and 07.) In a later conversation, I asked Steve why did he look down during (turn 08) and decided not to continue the conversation? He said he did that because of time constrain; he had to deliver his sketches before the end of the day, and his work was not going as fast as it should have been. There was no breach in the fluency of the conversations. We took equal turns, with no discernable pauses.

One-on-one cogen with Star

The cogen team chose the next vignette because it addressed the issue of privacy, and how reorganizing the cogen into one-on-one facilitated the structuring of a field that fostered privacy. During episode 4, I asked Star to come-in for our first one-on-one cogen during her lunch period. I felt that Star was in general doing much better in her classes, and I wanted her to know how I felt about her academic progress, and get her perspective on the new structure of cogen.

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Episode 4

Turn	Speaker	Text
01	Shady	there is something that I would like to commend you on::you have been coming to the class in time, instead of hanging out in the hallway (1.3) you know what i want you to do? i want you to keep track of instances that are related to science education in your home life, and record them in the notebook that i gave you (0.7)
02	Star	((shaking her head in approval)) ok
03	Shady	=fair enough? (0.9)
04	Star	as a matter of fact Ramiek asked me if he could do what we do::he would like to come to the cogen, and start doing what we do::he thinks it is fun (0.5)
05	Shady	i would love to (0.3) by the way what do you think of the new arrangement? (0.4) of us meeting one-on-one?
06	Star	=I think it's better
07	Shady	[why?
08	Star	=because when we talk::we all talk at the same time, when a subject come up, one person jump-in, and then you say let me say somethin, and it is good cause::when people say somethin they don't keep it here::i say somethin::they go around sayin ooo::h Star has problems with her mother::and this and that::that is why i like it::i feel if i don't want everybody to know about me and my family::i know whatever i tell you (0.5) you keep it to yourself
09	Shady	[you know that i will keep it
10	Star	[i know::that is why i tell you::i don't tell nobody else (0.9)

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11 Shady well, I tell you the truth::i feel more comfortable with this design, because if you have a problem that is not directly related to what is going on in the classroom in terms of teaching and learning and start talking about it, someone else might have the same problem (based on my prior experience in the group cogen meetings), and before you even know it everyone is talking about his or her problems, and nobody is talking about education::the way i look at it is education provides you with the opportunity to change what you don't like in your life

In turn 11, my cultural background played a hegemonic role, with all the macro structures in Star's life that prevented her from accessing much needed resources to succeed academically, unconsciously, I could not help but asking her to focus on education. This is an example of praxis, which is knowledge in action, only after the fact that I reflected on the conversation and assessed the possible impact of my utterances on Star. The cogen represented a field where we talked across categorical differences, such as, social class, race, and age; and because social fields are borderless, cultural practices from other fields appeared in cogen and vice versa. The one-on-one cogen provided opportunities for Star and I to discuss issues that might have affected her education without fear of divulging her privacy. Star brought out an important issue during our conversation, which is a possible way to maintain the privacy of the participating students in the cogen. Because most of the students in this class lived in the same housing project, maintaining the privacy of the cogen's conversations was an important issue. For urban youth maintaining respect in the street is an important aspect in their lived experiences, it is a survival concern that guarantees no one would "mess around with them". Accordingly, respect is not only a commodity that could be traded in the capital exchange helix (Tobin 2007), but also is a safety subject that guarantees their endurance in their immediate surroundings.

As the teacher-researcher in this study, I came across few instances where issues were brought up during the cogen conversations that were not included in the IRB approval, such as, the previously mentioned situation with Star. However, how all aspects of social life could be predicted before starting the research? For example, if a student is experiencing a difficult home life and would like to talk about it, shutting down this impulse in itself is hegemonic. Accordingly, as a teacher, I struggled over where to draw the line and divert the conversation into other topic. Overall, I felt that the quality of the cogen conversations improved because of the

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new design. They became fluid in nature with no discernable pauses. We exchanged turns, and maintained a mutual focus on what mattered most to us. The one-on-one cogen design provided the structure that afforded the expansion of agency for all the participants. Participating in one-on-one cogen helped me gain the social capital necessary for establishing successful teaching environment. I became more sensitive to my students' needs, and that in turn helped foster an atmosphere of mutual respect that evolved over time to better learning environment.

GROUP COGEN

The success of the newly designed cogen provided me with the opportunities to expand the successful interactions to a large cogen group. I proposed the idea to the class, I told them that it was Ok to join the group cogen, but also it was Ok if they decided not to join. I made it clear to them that the intention of the cogen was to improve teaching and learning in the classroom, which meant that all the participants were going to have a shared responsibility for developing a successful learning environment. The next episode highlights our first meeting as a group. The cogen team chose this vignette, because it represented a shift in the students' ontology. Contrary to their patterned behavior of resisting me, ridiculing each other, and not participating in the class, collectively the class decided which governance rules to institute and what are the consequences for breaking such rules. Although, I felt that some of the rules were hegemonic in nature, the students stuck to these rules over time, with the exceptions of few times.

Episode 5

Turn	Speaker	Text
01	Shady	soo↑:: what do you think? (0.5) we have to come up with class rules
02	Maria	=give↑me a board so we can post it (0.7)
03	Tre	no↑cutting (0.5)
04	Maria	what↑you all do in mr. shady's class? (0.4) yeah no talking
05	Ramiek	[how about my favorite one?::no cell phones
06	Najee	=yeah↑how about no iPod (0.9)
07	Maria	((laughing, and pointing at Najee)) why are you looking at me? (0.6)
08	Najee	((laughing)) if you bring yours↑:::i am going to bring my mp3 player
09	Tre	=treat your classmates with respect

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- 10 Stephanie [like this is going to happen in this class
((raising her eyebrows and looking at the
group))
- 11 Shady =what? (0.5)
- 12 Stephanie treating↑your classmate with respect
((laughing))
- 13 Shady =now::we didn't discuss what happens if
someone break the rules
- 14 Maria [so you want me to write what happen if we
break the rules? (0.5)
- 15 Shady what are the consequences if you break the
rules
- 16 Najee [you↑get a call home
- 17 Tre =what↑else?
- 18 Shady [how about if you obey all the rules, or part?
- 19 Maria [it' s all here:::you get to be invited to pizza
party, and go on the next trip

The dialogue in this vignette is characteristically continuous, with overlapping speech occurs. There are numerous examples of synchrony, such as, laughing together. At the mesolevel, the clearest examples were that utterances were coordinated with gesture, body movements and rhythms. I moved between being central to the periphery. The students were energetic, called out loudly, and interacted in ways that reflected their enthusiasm and high energy for being central to the decision making process. Networks of transactions were evident throughout the classroom. There were plenty of evidences supporting the emergence of solidarity expressed in voice intensity and gestures. Synchrony occurred where students took equal turns in the conversation with no one voice being privileged.

THE POTENTIAL OF COGEN

Diversity in race, ethnicity, and social class is bound to continue, due to the nature of globalization and the dream of establishing a world without borders. The role of education in such global environments is critical in achieving equity. It is essential to identify how cultural and social perceptions among the stakeholders might mediate the interest of urban students in science. The research conducted in this chapter is an authentic ethnography that aimed at capturing segments of social life in urban schools. As the teacher/researcher in the study, I had to learn how to interact successfully with my students and they had to learn how to interact effectively with me across categorical differences, such as, class, race, ethnicity and age.

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Cogen became seedbed for the production of a new culture that was oriented towards success inside and outside the classroom. The findings of the research reveal that using cogen in the classroom has expanded the agency of all participants, and in particular urban youth from one of the most challenging situations. Moreover, the results of the study showed that participation in cogen provided opportunities for the students to identify the macro|meso|micro structures that truncated their agency, and collectively as a research team we developed approaches to alter these oppressive structures. The outcomes of research have shown an increase in peer's learning, and the frequent use of science discourse in establishing their scientific arguments, pointing to the importance of the structural features on the students' learning outcomes. By examining the emergence of growth of new understandings in practice and development through cogen, I, together with my students, created the space to build a collective framework to inform learning standards, practice, and citizenship. Because social fields have no boundaries, some of the new skills, and practices acquired in the cogen sessions got reproduced, and transmitted in the classroom and in other fields. I have learned through cogen the value of respect, and its centrality in youth culture. Hence, I made sure that I was friendly, fair, and firm in dealings with the students, but most importantly when to confront a student regarding a mishap, and when to let go. I dealt with misbehavior in a decisive and brief manner. Therefore, even when my interactions led to the production of negative emotional energy, I followed that with an appropriate repair ritual (Pitts 2007), such as, apologizing, or joking with the students at the end of the class, and explain why I acted the way I did. Hence, the participation in cogen gave rise to a culture of improving teaching and learning of science across different social fields.

The conversations during cogen became resources to draw upon in designing research protocol, interpreting data, and transforming cultural practices that were not conducive to teaching and learning. For example, after the students' recommendations, I reduced the incidences of some practices, for example, one of the issues addressed during the cogen sessions was the impact of the scientific discourse on subverting the goal of "science for all". In dealing with this concern, I mentioned my view of scientific discourse as an accessibility issue, and how it would expand the students' communication skills. The cogen team composed of Star, Steve, and myself then developed different procedures that supported student comprehension of science content. Such examples are pre-assessing student's knowledge of relevant vocabulary terms through cooperative learning during a word grouping activity, and teaching mnemonic devices for easy memorization of definitions.

In reconstructing the cogen sessions, I used one-on-one cogen as a tool to narrow the cultural diversity among the participants (students and teachers.) Because of the structure of the one-on-one cogen the "Othering" process was not as explicit, as it was in the traditionally designed cogen (teacher-researcher, and two or more students.) The results show that the one-on-one cogen became a site that catalyzed positive change, and improved cultural adaptivity among the participating stakeholders. It provided the participants with the time and space to improve their understanding

of the factors that might contribute to cultural misalignment between teachers and students. Participating in the one-on-one cogen sponsored the production of an interstitial culture that is polyphonic and polysemic.

During the one-on-one cogen, I got the opportunity to discuss issues related to race, social class, and self-governance. For example, in my conversation with Steve about how the race of the teacher might mediate the outcome of teaching|learning in the classroom, he elaborated that the construction of race as an identity marker is mainly a media product. Thus, if you were black you would normally appear as a gangster, if you were Chinese you have to know Karate, and if you are white you have to be rich. In return, I had the opportunity to explain that the construction of race, and race relations is a situational. For example, in Egypt race might not be the most salient categorical representation, but social class, and tribal affiliation are the key stratifying factors. Through our conversation, and others alike I had the opportunity to explore the stance of some of my students, and they got the opportunity to explore my standpoint. The cultural practices in the cogen were transmitted to the class and vice versa, because social fields are sites where culture gets enacted, and these sites overlap in a boundless continuity.

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AUTHOR BIOGRAPHY

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WESLEY PITTS, SHARON MILLER & ANNABEL D'SOUZA

15. TEACHING IN CONTEXTS AND COMPLEXITIES: USING COGENERATIVE DIALOGUES AS AN INTEGRATED COLLABORATIVE APPROACH

Abstract In this chapter we highlight the use of cogenerated dialogue (cogen) as a collaborative instructional approach to teaching and learning science in a tenth grade high school chemistry course and a community college introductory level biology course. Both courses take place within the context of different public urban institutions in New York City. This approach is examined through the autobiographical narratives of two teachers – Annabel, a first year alternative certification route chemistry teacher who uses cogen to help implement Process Oriented Guided Inquiry Learning (POGIL) to teach Regents level chemistry, and Sharon a college level biology instructor who uses cogen to help implement case studies to teach biology. The ripple effects of these approaches are interrogated. Evidence shows there is dynamic willingness to change conventional instructional tactics to improve science instruction when cogen is utilized. Cogen became part of a unified transformative process of science instruction and learning.

The purpose and value of this autobiographical inquiry is linked to the public concern for improving science education, particularly the preparation of urban (inner city) science teachers. From a practical point of view we use this autobiographical inquiry to investigate experiences that afford new possibilities for teaching science successfully. Mindful of this purpose we come to this work with growing awareness of the processes and lived experiences we shared in co-constructing this autobiographical inquiry. Similar to Wolff-Michael Roth (2005) we view autobiographical inquiry as an essential way to collaboratively explore how science teachers create meaning through their experiences of being and becoming effective teachers across temporal, structural and other cultural resources. In sync with and anticipating the demands of such a collaborative endeavor we consider (both individually and collectively) the range of differences and similarities in themes and expressions that emerge from this autobiographical inquiry.

We provide our interpretive voices to make sense of this autobiographical inquiry and embrace the responsibilities and opportunities to explore the context of teaching as a resource for understanding the complexities for learning how to teach science in urban inner city high schools and community colleges. From this overarching perspective we pay attention to the dynamics of culture to explore

how comparative teacher experiences can provide insights that orient towards new possibilities around questions of improving science teacher education. In particular, this chapter combines two science teachers' (Annabel D'Souza and Sharon Miller) autobiographical narratives as lenses to investigate what was learned when cogenerated dialogue (cogen) were implemented in the development of learning how to teach science with others, each in their respective context. Annabel chose to use cogen to help her implement Process-Oriented Guided Inquiry Learning (POGIL) (Bunce, VandenPlas, Neiles and Flens 2010) to teach chemistry in a 10th grade high school course. In an introductory human biology course for non-biology majors in a community college Sharon chose to implement cogen and case studies that incorporated story/storytelling to highlight the interconnectedness of science and lived experiences (Herreid 1994).

ARRANGING THE AUTOBIOGRAPHICAL LANDSCAPE: COMMITMENTS, DECISIONS AND DEPARTURES

We embrace a standpoint that autobiographical inquiry into teaching science and learning to teaching science is a form of cultural enactment. That is, we focus on the combined productive and transformative potential and value of autobiographical inquiry as a dialectical process of being concomitantly produced and reproduced by its authors and readers. We follow Jean Clandinin and Shaun Murphy's (2010) fundamental argument that the fruits of inquiry into practice should go back into practice as renewable cultural resources (e.g., exemplars and ripple effects). Accordingly, the creation of autobiographical inquiry does not occur in a straight line from author(s) to audiences, but is developed through a dynamic back and forth process that combines and recombines the meanings of the text each time it is produced anew in practice by its author(s) and audiences. Concurrently, we share Barbara Merrill and Linden West's (2009) notion that (auto)biographical inquiry provides exiting opportunities to connect and weave understanding between disparate and at other times somewhat similar social phenomena and personal experiences in new and surprising ways. As such, our attentiveness to the complexities, specificities and interconnections of the narratives help to provide close links to cogen and extant sets of understandings (theory) about science teacher education and practice in sometimes neglected instructional contexts. The lived experiences portrayed in each inquiry importantly converge around questions about how to use cogen with other instructional frameworks to improve teaching science in the complexities of urban contexts.

Accordingly, we arrange the writing in this chapter to bring particularly tangible and practical approaches to understanding two unique, yet overlapping, models of experiences for learning how to teach science with cogen. The blend of autobiographical narratives stretches beyond the confines of each author's narrative alone to broaden the potential of new insights, applications and implications. The participatory demands of constructing this chapter were realized through the

interplay of monovocal and polyphonic voices that create numerous entry points into autobiographical inquiry. Ownership of voice within the polyphonic qualities of this chapter is captured through bidirectional transitions from autobiographical modes (single voice) to collaborative voice, incorporating all three authors. Throughout the chapter we speak in autobiographical modes with distinctive voices indicated by our respective names in the section titles. These sections are buttressed with interpretation and intratextually linked to convey possibilities and implications for science teacher education, collaboration and classroom instruction across complexities of contexts and experiences. These sections are also intertextually linked in that they emerge from and respond to larger structures across dynamic socioeconomic and political contexts and are in conversation with other chapters in this book. Although we admit that different judgments could be made on how to infuse autobiographical modes and transitions we take the standpoint that an instructive autobiographical corridor has been robustly developed to capture developmental and structural perspectives within a holistic understanding of learning how to teach science with cogen. At the end of the chapter we examine outcomes through the lens of ripple effects.

LEARNING ABOUT COGEN, CASE STUDIES AND POGIL WHILE BECOMING COLLEAGUES AND CO-RESEARCHERS (WESLEY PITTS)

I (Wesley) came to know Annabel and Sharon first as students and then quickly as valued colleagues in an advanced master's level science methods course that I taught during my first and second years as an assistant professor of science education at Lehman College, City University of New York (CUNY). Annabel was enrolled and sponsored by an alternate route certification science education master's program call the Teacher Opportunity Program (described below by Annabel) and Sharon was enrolled in a similar two-year master's program for students also seeking initial certification to teach middle and high school level science in New York State. I was the faculty coordinator for both programs. Annabel was seeking certification in Chemistry and Sharon in Biology. Although Annabel and Sharon both registered for the course during different semesters (approximately one year apart), we came to understand that the intertwining of contexts and complexities of New York City (NYC) directly and profoundly shaped our individual perspectives on learning how to teach science. Thinking back we came to realize that this central theme in the methods course was found in discussions around learning teaching practices that confronted the messy process of navigating what seems to be competing investments into practice that can deter and/or immediately intervene to ameliorate complex conditions in urban science classrooms. From our early interactions originating from the course we contemplated (to varying degrees) the prospects for new possibilities to engage and inform the foundation of our teaching practices.

I came to know about POGILs from my interaction with students and colleagues at the Penn Science Teacher Institute (Penn-STI) Master in Chemistry Education Program at the University of Pennsylvania where I taught a research course in

chemistry education. At Penn-STI, POGILs were used in education as well as content courses, particularly by Brian Robert to teach organic chemistry. A short time after the spring of 2007, I introduced this approach to my science education students at Lehman College. Similarly, I also incorporated case study methodology in my method courses after collaborating with Brahmadeo Dewprashad at the Borough of Manhattan Community College, CUNY. He was using case studies in undergraduate nursing and pre-professional science courses to teach organic chemistry. I invited Dewprashad to coteach with me, at Lehman College and at Penn-STI, in lessons on the application of case studies in teaching science at the middle and high school levels. Another opportunity for collaboration came when I invited Rebecca Kruse from Penn-STI to coteach with me at Lehman in lessons on how to write and use POGILs to teach science in the secondary levels. Kruse was also somewhat familiar with cogen. Since I had previously used cogen successfully in my teaching and research I introduced it to science education students at Lehman as a methodology that had catalytic and transformative potential to improve science instruction and learning. Having access to these methodologies (theoretical underpinnings and process) as well as others, such as cooperative learning and project-based learning (Colley and Pitts 2010), helped me with providing science teachers I supervised, particularly in-service teachers, with immediate tools and opportunities to implement transformative changes in their science classes. As in the cases of Annabel, who at the time was a first year high school science teacher teaching chemistry to tenth and eleventh grade students, and Sharon, who was teaching human biology to non-science majors in a community college, these methodologies afforded new teaching resources to expand their agency as teachers and learners in their science classrooms.

During our first year of working together with all three aforementioned methodologies (case studies, cogen and POGILs) a foundation was being built for our research collaboration. We came to share a direction that built on our intersectional approaches to using cogen with POGILs and case studies in biology. As Annabel completed her master's degree and joined the doctoral program in urban (science) education at the CUNY Graduate Center and Sharon began her master's thesis project at Lehman our conversations intensified and prospects for sustained collaboration began to develop more fully. In order to provide an avenue of research in teaching and learning with these methodologies I invited Annabel and Sharon to attend science education research seminars and squad meetings with a network of other researchers conducting research on cogen using sociocultural frameworks at the CUNY Graduate Center. After conducting several presentations at the squad meetings and international and national conferences we were invited to submit a book chapter proposal discussing our work with cogen. The proposal was eventually accepted and at the beginning of my third year as an assistant professor at Lehman College we formally formed our own mini research squad and began collaborating on this chapter and other research articles.

Over time having numerous informal and more systematic conversations about experiences with various models of teaching and what has worked and what did not

work for each of us, we located exemplars (culture) in our work that combined cogen with other instructional methodologies. Beyond commonalities we found approaches to cogen that shaped exemplars in the context and complexities of our own unique teaching practices. In the most general sense exemplars are offered as models of how practice works (Lyons and LaBoskey 2002). In this manner the development of exemplars is materially rooted in an emergent contextual framework of purpose, practice and applicability (e.g., their trustworthiness). In other words, exemplars have their own purpose brought to bear and contextualized in their own elements for authentic practice. I/we acknowledge that exemplars in general, including those presented in this chapter, provide no guarantee of success in all contexts. The value then in presenting exemplars in science education is realized in their educative potential, ripple effects and possibilities for catalyzing fluent practice to improve teaching and learning for those who use and experience them. In the next section Sharon explores her exemplary use of a biology case study (with storytelling) and cogen to teach human biology.

LEARNING TO TEACH DAY-TO-DAY IN AN URBAN COMMUNITY COLLEGE
(SHARON MILLER)

Learning to teach started earlier for me at an urban community college in New York City in 1994. Being an Occupational Safety and Health Act (OSHA) instructor made me a better teacher and made the transition to teaching in a community college easier. Also, I have been fortunate that I have collaborated and worked alongside colleagues who guided and recommended me for various teaching positions. One such occasion that would change my career forever was a co-worker who suggested that I apply to become a tutor at a tutorial program for nurses at the same urban community college within which I am now teaching human biology. He too, worked at the college as a tutor and suggested that the benefits of the teaching experience would outweigh the low wages. The then chairman of the science department, who is still currently teaching today, hired me. The chairman who hired me still affectionately refers to me as “Anatomy and Physiology.” This was the beginning of my pedagogical career – well, sort of.

My first tutoring assignment was as a tutor of anatomy and physiology to nursing students. Most of the students were workingwomen from varied combinations of racial, ethnic, and socioeconomic backgrounds who attended the program part-time. In 1994, as is the case today, nursing students were required to pass core courses, a practicum, and maintain a minimum grade point average of 3.0 to be eligible to take the New York State Licensure Examination for Registered Nurses. The work was hard and the practicum was harder. Attrition rate was high, and today, it is no different. It was hard to gain admission into the nursing program and harder to graduate. It often depended on getting the nursing students to think differently about how they learned best in the context of the program and to endure and succeed.

I started thinking differently about my teaching as I reflect back on the structure of tutoring sessions and how to make the sessions most effective. My first set of

objectives were to get students in, get them seated, start a structured session with specific objectives, so that they would not have time to think about anything else but anatomy and physiology. But, I soon learned it was not that simple. These students were (pre)occupied by their own lived experiences and had difficulty maintaining focus on learning the materials. I realized something at the second session – we were all females; therefore, we shared social experiences that bound us together. I came to believe that we could start talking about children, our families, friends, peers, physiology, and eventually ourselves as we tried to build a culture of trust and focus.

At first we spoke mainly about our personal and educational pursuits and not too much about physiology. This was fine because it took time to build trust amongst us. This trust-building experience was a challenging process because of the diversity of the learners. It was obvious that the nursing students were struggling to learn as much as I was struggling to teach; but we were slowly starting to work together on preparing them to pass anatomy and physiology and prepare them for the State nursing examination. Also, my job was on the line as my assignment was to get these nursing students to pass anatomy and physiology.

Since we were all females we naturally talked about our bodies as I talked about anatomy and physiology, which I felt was an excellent feminist approach to teaching. During these conversations I was conscientious about exhibiting positive body gesture to make the students feel comfortable. I used non-threatening means of communication such as, empathetic eye contact and active listening to help convey a connection to the topic at a level of understanding that took us to a discussion about the “*workings of organ systems – our insides.*” This was a way to work physiology into their everyday real life situations: the musculoskeletal system for lifting; the reproductive system for menstrual periods; the nervous system to help us dance; urination means the kidneys are working; the five senses for choosing favorite outfits, smelling burning food, listening to music and watching movies; the digestive system for satiety.

All in all I really felt our discussions increased my connection to nursing students, but were they connecting to me? I was not sure. I made a point of emphasizing to them that it is very important for us as females to be aware of how our bodies work, and that the basis of many types of research is female anatomy and structure. If we know ourselves on the outside as well as on the inside we tend to appreciate ourselves as nurturers, caregivers, and scientists. I occasionally used feminist constructive methodology in science classes because all students remember their mothers, the ultimate caregivers for family, friends, colleagues, students and the environment.

It was really during this time that I adopted an approach to a motivation, which included a story that would “tell the lesson” in a way that clicked with students. In this way I got my students to “open up.” This was the way our sessions started and ended, with greeting, talk, mostly from me, and as the nursing students listened, we progressed to talk about physiology and other things, but we managed to always stay on track.

STUDENTS ARE GOOD AT STARTING COGEN

Memories of my early years of learning to teach helped me address pedagogical issues that I currently face in teaching human biology to undergraduate non-biology majors at the same community college at which I started tutoring 16 years earlier. Teaching human biology would have been more difficult for me to handle if I had not been able to draw from these earlier learning and teaching experiences. I formally began using case studies and story while learning to teach human biology. It is natural for me to jump into storytelling to initiate cogen at any point in a class to foster science learning to its fullest potential; eliminate the artificial boundaries between cogen and the classroom. The story becomes a structure for cogen, as well a way to encourage students to participate in cogen. Students play a large part in the unfolding of stories in whole class (see Ashraf Shady's chapter-this volume) or small group cogen. Small group cogen can take place during class time or outside of class time.

I started using cogen in my evening class with a diverse group of students to help build students' symbolic capital and to develop a particular culture of inclusion and maintain focus within the classroom. It was important for me that my students feel that they have a say, that they are welcomed, and that they do not have to worry about having their suggestions dismissed or ignored (by peers or the professor). I interwove small breakout cogen groups or, when appropriate, whole class cogen during the class. Timely suggestions, opinion, an eagerness to clarify a portion of the lecture or focused interest were used as good starting points for cogen. For me cogen is different from a general directed classroom discussion, which I used sometimes, because participation in the discussion groups was mandatory and prescribed and the outcomes were usually directed and predetermined. As such, the complexity of initiating cogen can be overshadowed by the simplicity of the start. In cogen, unlike discussion groups, there has to be time for productive input from the participants who want to contribute. Roles in the cogen are also negotiated and the outcome involves suggestions that we could build agreement on how to collectively and individually proceed in anticipated future learning experiences.

Starting cogen to talk about the biology class might include talk about non-sensical things in between, but the discussion of biology does emerge in the dialogue. Cogen starts with one or more shared perspectives about the objective for the activity and learning of biology. Students do much to help start cogen. I participated in the cogen as an equal voice. Cogen gets my students talking and interacting with their peers and is effective as a teaching and learning tool as it unfolds from a dynamic willingness to share goals, roles, space to collaboratively participate and attain learning outcomes.

In addition, I use stories attached to case studies in human biology in cogen to start cogen. Stories can originate from "science activities" that students do every day without realizing. For example, reading food labels, cooking, eating right, counting change, using bleach without ammonia, calling the doctor about a prescription; gardening, and becoming pregnant are good topics to infuse into storytelling. Using

these and other types of common experiences relating to science can be especially relevant to college level classes. Many college level students have rich experiences that easily connect to teaching and learning human biology. To infuse stories as a tool of engagement in cogen, students and I worked together, through the methodologies of storytelling and case studies to connect and build on science issues that they can relate to in their daily lives.

STORYTELLING MAKES FOR GOOD CASE STUDY TEACHING

I was encouraged to use case studies and storytelling more systematically in my teaching at the graduate science education methods course (taught by Wesley and Brahmdeo Dewprashad). In that course, Dewprashad was invited to speak about case studies. During his talk, I discovered that he successfully used storytelling as a central part of case studies to teach his organic chemistry courses at a community college. Dewprashad (2009) has demonstrated the efficiency of case studies to relate students to concepts in organic chemistry using the HIV virus and the chemistry of cocaine, and how it affects the human body as examples. Since then, I have also looked at works from Herried (2006), Connelly and Clandinin (1990), and others to use case studies and story as modes of knowing and as reliable frameworks for lesson planning and student participation in science activities. Since I was already using stories to encourage participation with cogen I saw stories embedded in cogen as natural connectors to introduce human biology case studies to cogen. The benefit of this approach is that case studies evolve from narrative self inquiry because narratives allow us to explore lived experience as it relates to science teaching and learning, adding characters, sequenced events, plots, a conclusion, followed by an open discussion providing an educational message, to which urban communities relate. Also, what's nice about storytelling is that a story is not fixed in how it unfolds. Storytelling can lead to problem solving and further inquiry and research, while still supporting commonly taught topics in the human biology curriculum.

COGEN CAN BE HARD TO SELL...BUT IT DOES!!

Getting students to participate in the Fetal Pig Laboratory is always difficult. During the spring 2010 semester alone we had a few laments, tantrums and crying spells. "Why do we have to dissect helpless animals? What's the good of it?" During whole class cogen with my spring 2010 human biology class, I tried to get students in a good mood with storytelling. I anticipated this to be a fluent transition from an unproductive cogen about dissection – cogen just flows, sometimes in a direction the teacher may not like and be able to control. There were 27 students from a diverse background and many did not want to participate in the dissection. I anticipated that if I used storytelling I could refocus my students for a moment during the cogen, and "sell" the dissection lab. I discovered through an earlier cogen that it was important for many students to understand why we were dissecting the

fetal pig. In the whole class cogen about the laboratory and dissection there was no lead student; however, two Muslim students indicated that, "...we don't eat pigs, we don't touch it, but we understand why we should know about it." An outcome from this part of the cogen was that we agreed to respect those who did not want to participate in the fetal pig dissection but they would find other productive ways to participate in the laboratory.

As the cogen progressed so did the story, which evolved through the introduction of comparative anatomy, as I did with the struggling nursing students 16 years ago. As I told the story, I traced the atlas of an actual fetal piglet. So instead of marching through the atlas, fact by fact, I tried to invoke a vivid image of the internal organs of the piglet as it relates to us as humans, through storytelling. The story took on a specific situation, relating the shape, placement and size of the fetal pig's organs. Again, this was a hard sell. First, I told the students that we use the fetal pig because it is cheaper than other animals to dissect and closer in anatomical structure to that of humans. The objective is to know how our organs look in relation to the fetal piglet, which has implications in human cardiovascular and cancer research. As I instruct via story the students begin to join in as storytellers and discuss their experiences of obesity, abdominal fat, atherosclerosis, and cancer on these structures. At the end of the cogen the class decided that students who did not want to participate in the dissection would be present for the laboratory, make observation reports about the dissection, and support students who were conducting the dissection.

Below is a vignette constructed from my notes describing the Fetal Pig Dissection Laboratory that occurred a few days after the cogen described above. This was the last lab activity of the semester. All 27 students participated in the lab of which 5 students decided to be participant observers. The students were arranged in dissection groups of 6. Students organized their own groups and most were arranged primarily by interest and friendship.

Fetal pig dissection

Group 3 was on task. Some of the other groups were not, but attempting to dissect the fetal pig. Many were asking me to help them. Group 5 noticed that I was working with Group 4 stressfully trying to distinguish the pancreas from the spleen. Group 5 was calling me. Interestingly, Group 5 backed away and proceeded to elicit help from Group 3, who already isolated the pancreas. "Could you help us please to find the pancreas and the spleen? We want to see how much it looks like ours." When I heard this I lifted my head, and looked at Groups 3 & 5 out of the corner of my eye, but only for a moment. I saw Group 3 gather their dissecting tools and teach the dissection to Group 5. I smiled and continued working with Group 4 on the dissection. The five participant observers interacting with several groups helped to answer anatomical questions and came to me as a spokesperson for a particular group letting me know the problems the group was experiencing. This was a good thing that

resulted from the earlier cogen about participation in the lab “We can do it Miss Miller...see look we did it!!!” even though many students were against the dissection, we talked it over first and collaboratively succeeded with the most difficult laboratory of the semester.

Cogen and storytelling can work to help organize formal laboratory activities and increase productive participation. I used storytelling during cogen to link the purpose and focus of the laboratory to participants' life experiences. I also found it extremely helpful to organize a pre-laboratory cogen, as described above, to discuss concerns (including safety protocols) and conceive agreed upon roles for participants. Normally I would have several students absent from the fetal pig dissection, but since I helped organize the pre-laboratory cogen for the dissection with my spring 2010 class we were able to achieve full attendance for the dissection activity and meaningful participation. I would get angry when students who completed an assignment ahead of most students in the laboratory sessions sat and talked, thereby distracting others. Accordingly, it was important for me to observe group 3 helping group 5 isolate the spleen and pancreas and to witness the participant observers helping the groups troubleshoot and get help when difficulties arose. When science students and teachers, both individually and collaboratively, co-conceive meaningful ways of creating and engaging in the learning environment, more opportunities are created to increasing meaningful participation and to learn science.

CONSIDERING EMERGENT CONTEXTS AND GOALS

Sharon's approach to teaching biology is dynamic and offers cogen and storytelling as an opportunity to connect the curriculum to students' interests and lives. She encourages her students to engage in cogen and case studies/storytelling to promote and sustain their interest in learning biology. There is evidence that the framework Sharon is using in her classroom is working for some students. Sharon provided explicit examples in which the usefulness of cogen and storytelling are grounded in the instructional need to increase meaningful participation in science classrooms. Immediate and long term instructional needs often act in concert and recursively to setup standpoints of comparison and contrast of how choices and decisions are conceived and enacted. What was observed during the interactions of groups 3 and 5 during the fetal pig dissection is that there is a sense that participation in the pre-laboratory cogen made a difference in helping students coplan and decide how to engage in formal science classroom laboratory activities. It was important to have students agree about different roles and levels of participation during the dissection. For example, participant observers took observational notes and were asked to help keep the mood positive by providing positive encouragement to those conducting the dissection. This approach acknowledged the need for different modes of active and supportive participation while learning science. What was also observed is that students are serious in their intent to interrogate salient problems and speak seriously to one

another in focused interactions in which there are ample opportunities for success and experiences of success particularly through peer teaching. The implications of such a strategy can reach students from diverse backgrounds to create solidarity around teaching and learning human biology in the classroom and laboratory settings. Sharon advocates for the standpoint that teachers (as well as students) should be willing to share their teaching and learning stories with each other, and to not dissociate just because there is an immediate need to conceive ways to keep control over the learning environment. In particular, she also advocates that teachers avoid carrying the long-term responsibility for exerting control over students.

In the next section Annabel integrates cogen with POGIL to establish a direction towards improving science teacher education that challenges the current prevailing perspective that “top-down” and “control-over” methods of accountability should be the primary mechanism to improve science teacher education and student learning and achievement.

LEARNING TO TEACH IN THE PROCESS OF PRACTICE (ANNABEL D’SOUZA)

I never thought I would become a teacher. I had declared chemistry and forensic science as my major in my undergraduate education with the goal that I would enter field science. One day, however, I became disillusioned with the pharmaceutical company I was working for and decided to change the direction of my career. I entered teaching through a non-traditional teaching program, generally referred to as an alternate certification route education program (Grossman and Loeb 2008). Several of these programs were established by (or in collaboration with) the NYC Department of Education and are in response to the crisis in teacher shortages in New York City (NYC) public schools. They attempt to supply the demand for teachers in various education fields, especially in shortage fields like math and science. I was a participant in the Teaching Opportunity Program, an alternate certificate route program, sponsored by the City University of New York in cooperation with the NYC Department of Education.

There are several alternate certification education programs and they share similar teacher preparation approaches. Generally most participants in these programs have no prior teaching experience and undergo intensive pre-service training during the summer before the first day of the school year. Teachers are then guided to find a full-time teaching position for the following school year. However, in addition to the lack of prior experience in the classroom, generally teachers in these programs are not accustomed to the culture and encounters commonly enacted by their urban students. These features of the teacher education program contributed to difficulties I faced when I tried to use control-over approaches in my teaching – expecting students to follow my instructions in class or engage in classroom activities. My students felt that I needed to ‘earn their respect’ first. Naturally, being a first year teacher I lacked this experience. My classroom lacked solidarity, as my students would not follow my directions, sit in their assigned seats, pay attention to my

lesson, and perform assigned tasks on time. I was constantly trying to get them to be quiet and felt that I spent most of the instructional time attempting to curb their excessive chatting. However, I knew that if I was going to *survive* my first year of teaching I had to gain their respect and achieve solidarity so that we could all work towards a common agreeable goal, which I felt was to engage in and develop an effective science learning environment so that they could pass the NYC Chemistry Regents exam.

In addition to my struggle with classroom management, I was also responsible for ensuring that my students had a minimum of 1200 minutes of relevant laboratory experience that would help them qualify to take the Chemistry Regents. However, I was in a small NYC public high school and did not have lab space or materials. Searching for a suitable alternative I was introduced to Process-Oriented Guided Inquiry Learning (POGIL) in Wesley's graduate science methods course. In the course, I was given a copy of several of the high school chemistry POGIL activities and decided to use them as laboratories as well as classroom activities. My challenges in the classroom were further compounded by my attempt to incorporate POGILs into my Regents chemistry laboratory curriculum and classroom instruction.

LEARNING TO TEACH SUCCESSFULLY WITH POGIL AND COGEN

POGILs are activities that begin with a model and ask students to generate answers to general factual questions, often called direct questions. Questions such as 'what? which? where? And how? Students are then led through several tasks where the questions move from direct to higher-ordered type questions and finally open-ended. These questions usually begin with 'how, explain' etc. POGILs are ideal for group work where students discuss and debate answers and develop a deep understanding of the topic. Teachers act as facilitators and guide students while they are fully engaged in the process of developing several important scientific and world skills such as communication and problem solving.

I set my students in groups of four, based on their interim exams results. Groups consisted of mixed gender but had at least one 'master-level', one or two 'intermediate-level', and one or two 'beginner-level' students with the number of intermediate and beginner students varying among groups depending on the class. I then selected one student to be 'leader' of the group. This student was responsible for ensuring that everyone was on task and that everyone would complete the activity on time. Throughout the activity I continued to survey the room, monitor and assist students – but only as facilitator. I did this by re-directing their attention to the models, keywords in the questions and asking them to recall their prior knowledge.

Initially, my students were frustrated and disinterested in the activities. Some did not care for them and most found them too difficult. My students often found that the direct, convergent, as well as application type open-ended divergent questions within the POGIL were too challenging and complex. Several of my students cried after attempting the first POGIL activity. The first lesson was on the atom and the nucleus

and it began with a model of the symbol and the atomic and mass number. However, it did not have a mathematical representation where the respective atomic and mass numbers were, instead it had the letters A and Z and a small footnote stating what A and Z stood for. Students had to learn how to read information, connect it with their own prior knowledge of what the actual atomic and mass numbers were (based on the symbol and their periodic table), and then proceed to answer the questions. The lesson also asked about the number of neutrons, electrons and protons and the students had to comprehend visual representation of mathematical concepts to answer those questions. They had to count the number of circles shown and connect what they found with the legend for the type of subatomic particle it represented and then calculate the number of neutrons and derive the definition of isotope.

Meiko, who was known to have a reputation of being a ‘bright’ student, told me, “it seems that everything I do is wrong, I just don’t get it.” In contrast, Kalisa, who was also one of the highest achieving students in the class took on the challenge since she felt this was a different way to look at a scientific concept, almost like a puzzle. She decided to focus on mastering the topic. I was perturbed by this contradiction in behavior between my two students, who were not only peers but close friends as well. One gave up and one pushed on. What made them think like this? What experiences did they go through in life, in school, in science education? I wanted and needed a forum where I could engage in such dialogues and get not only to know more about their reasons behind their reactions, but also how to use their strengths to improve the classroom learning environment. Moreover, I realized I had to build rapport with students and earn their trust and respect, as I knew that I would face further resistance if this were not achieved. I needed students to work *with* me to do the work I assigned so that we could arrive at the agreed goal, as they all had to take the Chemistry Regents at the end of the year.

In the same science methods course I was taking that semester, where POGILs were discussed, I was introduced to cogen. To comprehend the learning environment that the POGIL activities created I implemented this pedagogical strategy. I decided to implement cogen in my New York City public high school chemistry classroom.

A PATHWAY TO SOLIDARITY: USING COGEN TO REDUCE CLASSROOM CONTRADICTIONS

In my classroom my students and I discussed the learning environment and reflected on the practices implemented during the lesson. All students in the class were invited to participate. Sometimes I had cogen with one student but often I engaged in cogen with no more than five students. My cogen sessions included mixed gender and mixed race. They took place after school, about twice a week. Initially, cogen focused on the use of POGILs. I learned that students struggled with graphical and visual analysis. They were not able to read legends or cues that helped them understand the models in the activities. They were used to direct factual ‘in your face’ information. Due to this students who were academically successful like Kalisa and Meiko felt

that they were failing because they were supposed to know how to perform tasks, based on prior school experiences and teacher expectations. Several POGIL group leaders expressed that they “did not want to look bad in front of other students” and that they “felt dumb because it was so difficult.” Students were starting to express their feelings towards my class and I wanted them to feel confident and motivated so we took turns being heard and listened to. I showed them respect by telling them that I would ask more leading questions that would start the process off more smoothly. I would also encourage their mini-successes and over time they would develop skills needed to complete the POGIL activities easily.

Later the cogen revolved around concerns regarding my teaching practices or classroom management. Students, like Michael, a 10th grader and Ciara, an 11th grader, would discuss viable reactions that they should exhibit when a particular student was distracting them. We also discussed what I should do and the different teaching styles that worked. Students shared how they felt when I was too anxious or how humor helped the class. They told me that I talked too fast! They also told me that structuring every activity by time (e.g., one minute to copy the aim or five minutes to work on the do-now) helped keep them focus. As a teacher, it is often difficult to see beyond yourself and the overall effect a certain strategy or mood has. It was through these sessions that I was able to collaborate and reflect on my own practice, which ultimately is a critical tenet of pedagogy.

Martin (2006) found that through her cogen sessions she was “able to form cohesive learning environments that acted to acknowledge and value students contributions to the learning environment.” Similarly, I implemented cogen in my classroom to allow students to have a voice and a personal investment in their own learning. In my class, I was able to reduce academic resistance by the students, which led to higher expectations, a change in my own teaching style, and transformations to the implementation of lessons.

I decided to start building my students’ confidence in chemistry so that they could form this cohesive learning environment and start guiding themselves, which was my ultimate goal for them. Initially, I felt that they expected me to lead the direction of the class and give them the answers, but through successive cogen sessions, a pattern emerged where students would group together collectively and use their own resources to determine the solution. One such tool was self-directed grouping where students who understood the material, such as Regents Chemistry questions, would help those who were struggling without being prompted by me. Furthermore, using their dialogue and interaction with me, I was able to adjust my teaching style to meet their needs. I used PowerPoint presentations to help them with their visual and graphical skills and developed my questioning strategy. When students would say, “why am I learning this? Where am I ever going to use this? Science is so boring!” I found articles, websites, examples and project ideas that connected science to their communities and lives. I was also able to attain critical knowledge about their personalities and strengths thus directing their skills for better use in the class.

I learned through cogen that Kalisa's agency, which is her ability to act, was inspired by an innate goal to "not end up where [her] mother was at [her] (Kalisa's) age and go to college." Kalisa came into my class a shy, respectful student. She had academically succeeded in Living Environment and was self-motivated, but did not interact with anyone except for two other students in the class. After several cogen sessions where we discussed her mini-success on successfully completing the challenging POGIL activities we developed a bond around our common values concerning the educative process and by forming mini-groups of at least six students Kalisa emerged as a motivator for other students in the class to stay on task and complete assignments. After reflecting on the students' reaction to the POGILs, and using cogen as a resource for understanding classroom dynamics, I realized that they had probably never experienced anything like this. Perhaps it was the questions within the POGIL, which went from direct to convergent (and sometimes divergent), or possibly it was that they had to ascertain everything for the first time rather than be handed the answers.

This was an eye-opener for me, and although I was tempted to banish POGILs from my classroom, I realized that POGILs were just what students needed. I wanted my students to practice working with inferential questions, because I knew that they would be facing more of those types of questions in the future. I also wanted them to start having more confidence in themselves and be less dependent on me. They could only do this by developing critical thinking and problem solving skills. This is what the POGILs aspired to establish. Furthermore, I realized that, in my classroom, POGILs were an effective instructional model for teaching chemistry, since they involved student directed learning and encouraged students to engage in constructivist ways to develop and internalize science knowledge. Students were able to connect the POGIL activities to the Regents examination, as the end question would often be a Chemistry Regents question.

I felt that as a new teacher my two greatest challenges were classroom management and pedagogy or lesson development. Through the use of cogen I was able to gain respect and support from my students so that when I implemented either a strategy such as a chemistry game or a request such as a seating chart, I did not meet resistance. Furthermore, students were able to express the effect of the game or PowerPoint presentation. It encouraged me to actively engage in the reflective process of teaching, which led to changes in the learning environment. In addition, my students and I were able to create solidarity by embracing in a collective responsibility to improve the teaching and learning of science in the urban classroom not only for the Regents Chemistry exam but also because most of them now found science interesting. This helped relieve some of the classroom management issues that arose and negatively affected the learning environment. In turn, I was able to focus on the learning needs of my students and develop curriculum suited to their learning styles. In my classroom cogen was used as a tool, a teacher resource to collaborate with my students and create solidarity around teaching and learning science.

As a new teacher I found my first year in the classroom extremely challenging without the additional burden of balancing graduate level work with classroom instruction. I had to equilibrate reading, writing, completing assignments as well as the administrative challenges of daily teaching, including classroom management and writing effective lesson plans. In addition to these challenges my school also lacked a working science laboratory and I was responsible for ensuring that my students met the New York State laboratory requirements to qualify for the NYS Chemistry Regents. This was my initial motivation for integrating POGILs and cogen.

RIPPLE EFFECTS CAN BE IMMENSE, UNCONTROLLABLE AND AMBIGUOUS

There is no doubt that cogen has produced all kinds of ripple effects (cultural practices) and has helped to produce and sustain very helpful knowledge about teaching and learning science. Kenneth Tobin (2010, p. 270) notes that the notion of ripple effect structures individuals learning from one another by being with each other and could produce desirable changes and interactions when participants in a science classroom share responsibility for teaching and learning. This notion offers useful means by which to discuss Annabel and Sharon's experiences with cogen. What was highlighted in this chapter is that methodologies used to teach, learn and learn how to teach science can be informed and enhanced in desirable ways when cogen is integrated with these approaches. Importantly, the way to understand the complexity in each exemplar is not to view it as devoid of context (e.g., from method courses to implementation in science classrooms), but as an anticipatory approach that contingently collocates and integrates theory, practice and context (particularly participants) over time. Learning to teach science in favorable or unfavorable contexts, taking account of its associated conditions, emerges in gradations of organic forms against what is thought of as a narrative ideal. Accordingly, we re-emphasize that there is no particularly correct way to implement and structure cogen in practice. As stated earlier (and in other chapters), teaching, learning and learning to teach science are cultural activities – providing sources and resources that catalyze opportunities for tactical and potential uptake of ripple effects, including those associated with cogen. We concur with Gillian Bayne and Kate Scantlebury (2011) that cogen is best experienced in both practice and theory. That is, cogen is not merely understood as a theoretical abstraction but as an actual practice developed (in our case) as a constituent of teaching and learning to teach science.

As we consider desirable ripple effects associated with our exemplars we acknowledge that ripple effects can be immense, uncontrollable, and at other times ambiguous. The variety of contrasting qualities represents both coherence and tension shaped by change in practice and understanding of both theory and practice. If opportunities to interact productively are ambiguous and not understood they present setbacks to creating useful changes. However, in Sharon's case her experience with the pre-lab cogen was immense and at times uncontrollable. During the pre-lab, cogen participants articulated anxiety in participating in the dissection of the fetal

fig. Although Sharon did not like and could not control where the discussion was headed, she was able to use story during cogen to provide structures and opportunities (including motivation) for students to enter and shape future possibilities on how to successfully engage in the dissection. Accordingly, participating in and with others in cogen constitute a context where the opportunities to gain scientific knowledge and decide on how to collectively proceed during a future formal scientific activity (the dissection) is an important outcome and ripple effect.

In Annabel's case ripple effects were also immense. Immediate goals of new science teachers to teach science and manage classrooms successfully are often undermined by a desire to exercise control over students. Whatever the successful structures of classroom management and interaction might be conceived as, they emerge as territories that surround and subsume the exigencies and long-term teaching goals and encounters in the classroom. The point here is that the notion of control-over management strategies became gradually detached from a central role in Annabel's classroom practice and through cogen a notion of control with and responsibility (including coteaching) became central elements of her classroom strategies. Annabel was able to get more students to share and conceive ways of being successful chemistry students. From these perspectives, Annabel and Sharon's work with cogen were significant. They both utilized cogen as cultural sources and resources to indicate ways to recontextualize established methodologies used to teach science and cultivate capacities to learn how to teach.

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FEMI S. OTULAJA & MICHELLE V. THORNTON

16. TRANSFORMING A TEACHER'S AND STUDENTS' ONTOLOGIES THROUGH SMALL-GROUP COLLECTIVE AND COLLABORATIVE DIALOGIC ACTIONS IN THE URBAN SCIENCE CLASSROOM

Abstract This chapter focuses on the ontological shift experienced by an urban science teacher and her students when she took the risk of engaging them in discursive dialogues. This approach emanated from her search for a better way to create a classroom environment conducive for teaching and learning of science in a culturally diversified classroom. The overall goal was to improve the teaching and learning of science while ameliorating markers of difference that often contradict and constrain successful interactions between the teacher and her students. Cogenerative dialogue (cogen) became a tool for interrogating and explicating what was happening in the classroom and also for understanding why. Cogen also played a significant role in bringing participants together to collectively and collaboratively generate solutions.

Michelle never thought she would be a teacher. When she left post-graduate studies as a plant pathologist to raise a family, her thought was to return to the routine work of the lab. However, through circumstantial serendipity, she found herself teaching general science in a middle school in Winston-Salem, North Carolina for a year before moving up to Philadelphia, Pennsylvania with her new family. When Michelle arrived at her new location, she tried all she could to avoid becoming a science teacher. She has heard from various sources how difficult it was to teach in the urban public school systems; the lack of resources, teacher burnout and turnover rates, the tracking of students, and how students behaved and chronic absenteeism. She did not want to be part of that. She would rather stick to the routine of the lab as she enjoyed bench work. She concentrated her efforts on securing a position that would utilize her lab-related expertise. When her efforts did not yield the results she was expecting, she decided to rethink her vouched position on teaching and give it another try. She applied for a position as a science teacher and was appointed with mandate to take some education classes so as to obtain her teacher certification as a biology teacher and gain some pedagogical know-how.

LEARNING TO TEACH THE TRADITIONAL WAY

Like many career changers such as me, Michelle came into teaching science without the advantage of having taken teaching methods courses that would have prepared her for her new vocation of teaching science, especially in a challenging urban (inner city) high school with all its attendant issues. She also did not have the luxury of teaching practicum where she would have been paired with at least one cooperating teacher and provided with opportunities to experience the dynamics of the science classroom and learn the “how to” of the teaching profession as a student teacher.

Michelle started taking some education courses at a private university in Philadelphia, while she was teaching science at a public high school with a culturally diverse student population. During a conversation between Michelle and I, she alluded to the fact that the education courses she took did not really prepare her to handle the intricacies and complexities of the interactions and emotional relationships emergent in the classroom. Most of the courses, she said, reiterated the traditional methods of teaching, in which the teacher is the “boss” in the class. She was taught to take charge and control her students and their learning. The deficit perspectives were often reinforced by the pedagogical knowledge being espoused by the methods course instructors. She learned that in order to be an effective teacher, she has to deal with disciplinary infringements using heavy-handed tactics so as to send messages that she is in control of all aspects of the interactions in her classroom. Students are to sit quietly in their seats, raise their hands, and be called upon before they could answer her questions or contribute to discussions. It was common practice by teacher educators to advise teachers not to smile for the first three months of the school year so students don’t think they are softies. She must look stern and maintain exterior toughness to show that she is in charge. She thought this was active learning until she took more teaching methods courses later that challenged the earlier pedagogical practice she was taught.

Michelle’s experience mirrors my experience as a second-career high school science teacher in the New York City public school system. I did not hear about critical pedagogy until I took a chemistry education methods course in my last semester of a Masters of Secondary Science Education degree program at New York University (NYU). It was in that course that I first learned about critical pedagogy, coteaching, and cogen. As an in-service teacher, I attended many professional development courses organized by my teachers’ union where traditional teaching methods were routinely emphasized. I remember one in particular during which the instructor sternly warned us not to interact with our students as a normal classroom practice. “They are not your children,” she emphasized, “don’t touch them with a ten-foot pole. They will disrespect you. They will think you are a “softie.” Don’t be soft on them.” Many of us left that day accepting this notion of teaching as our *modus operandi*. This experience resonated with the culture of power and control and seemed to be generally accepted as the norm. The approach advocated by the

professional developer above would have continued to subjugate and devalue justice, caring, equity and democracy in the classroom (hooks 2003); and would not have created the space needed for students' voices to be heard (Delpit 1995).

TRADITIONAL TEACHING IN PRAXIS

Michelle has been teaching biology and chemistry and mentoring/teaching a hotel management class for five years at *Fairness* high school before we met. As a teacher employing the traditional paradigm of teaching and learning instructions in her class, Michelle established sets of "do not" rules in her classrooms the way she was taught to do in those methods classes. But those rules could not be enforced justly, if at all. Those rules often constrain rather than foster the working interactions and relationships Michelle was trying to establish and maintain with her students. Some students break the rules and do not seem to care. Many students seem preoccupied with various other issues, other than education, that require dialogic interaction to ameliorate. Issues in their home life tend to creep into their school life causing distractions and disruptions in the class making learning difficult. Michelle's teaching and pedagogical content knowledge seem infected by the situations in the classrooms. All the deficit things she had heard about and dreaded were unfolding before her eyes. She pondered what to do.

In an attempt to maintain control over students, Michelle was reaching further into her *toolkit* and implementing more of the traditional teaching methods' strategies she had been learning in the education courses to address the issues she was facing. For example, she wouldn't sit down for a moment while class was in session. She needed to show that she was in control and to communicate to students that she was watching every move they make and was ready to act swiftly to forestall any "mischievous" act by any student. She avers, "Even when taking roll on the computer, I would never sit down. I was afraid to sit down because I thought I would lose control of my class. I needed to know their every move. They needed to know that I was paying attention to them. I needed to show them that teachers really do have eyes in the back of their heads. I was not willing to loose control of my class. I needed to be on top of my game and stay a step ahead of them." She would paces around the classroom with stern expressions on her face to let students know that she was not a softie because, "I am not prepared to be run-over," she said.

Prior to her shift in ontology, Michelle spoke over and above her students' voices when she engaged her "teacher's voice," as she taught. "I thought I was supposed to project my voice," she said. For example, as shown in Episode 1 excerpted below, she raises her voice (utterances) higher in pitch (fundamental frequency (f_0), in Hertz (Hz)) and intensity (loudness, decibel (dB)) beyond that of the students as they respond to her questions. Prosodic analysis, as explained by Pitts (2007), shows that Michelle's average pitch of 370 Hz is more than one hundred and fifty percent higher than the average pitch of her students at 230 Hz. The power output (intensity of utterance; the power in the air) averaged 77 dB compared to 66 dB for student

(Nix); a difference of 11 dB in loudness. For every 10 dB increase in intensity, there is a doubling effect of loudness of speech. This pattern is different from Michelle's normal voice (in pitch and intensity) when she engages in regular conversations with the same students without the pressure of teaching; Michelle's pitch averaged 222 Hz with an intensity that averaged 70 dB. Students considered the "teacher's voice" as yelling or shouting. A student pointed out during a cogen that the way Michelle raises her voice when teaching reminds her of what her own mother does when there is conflict at home and so, she (Taylor) often makes conscious decision to tune Michelle off as she does her mother. "You shout just like my mother when she comes home from work," Taylor said, "everything we do is wrong and she starts yelling, kicking furniture."

Episode 1

- 01 Michelle: ... explain animal cell. (372Hz, 77dB) (0.6s)
Somebody explain the differences between plant
and animal cells for me. (374Hz, 76dB) (1.1s)
What are the major differences? (360Hz, 77dB)
(1.4s)
- 02 Nix: Animals, you could walk but plants grow like
grass, sort of ... (222Hz, 66dB) (2.5s)
- 03 Michelle: What are the major differences between the cells?
(336Hz, 77dB)
- 04 Nix: =Oh, the cell? (228Hz, 66dB)
- 05 Michelle: =What are the major differences between plant
[and ani]mal cell? (346Hz, 77dB)
- 06 Nix: =[animal can]
- 07 Nix: =animal can reproduce and the plant, well, it
can repro..., well, it's easier to begin with ...
(236Hz, 65dB)
- 08 Michelle: =Think about the organelles. What are the major
differences between (348Hz, 77dB) (0.3s) plant and
cells and their organelles and their structure?
(326Hz, 77dB) (1.0s)
- 09 Jen: Plant has a vacuole (230Hz, 67dB)
- 10 Sunshine: =Ms., repeat the question (229Hz, 65dB)
- 11Michelle: =Yes (274Hz, 74dB) (4.7s)
- 12 Students: ((mumbings))
- 13 Student 1: I don't see how that is ... (183Hz, 68dB) (4.0s)
- 14 Students: ((mumbings))
- 15 Michelle: What are the major differences? (379Hz, 78dB)

For Michelle, the “teacher’s voice” seems to serve the purpose of the teacher-centeredness in traditional pedagogy. It seems to provide Michelle with an aura of control and maintains power over students. But the “teacher’s voice” could be intimidating, instilling trepidations (fear) and lack of confidence in students. The traditional teaching methods often rationalize this approach as having good classroom management while neglecting the fact that students may be intimidated to the point where they are afraid to volunteer answers to teacher’s questions. In essence, students tend to keep quiet and refuse to take risks. This “forced silence” becomes a double-edged sword that cuts both ways. On one end, it seems to give Michelle the false consciousness of being in control, and having her students afraid to act up. On the other end, most students fell silent failing to respond to Michelle’s questions and causing her to become irritated and agitated, as demonstrated in Episode 2 below, a continuation of the same lesson.

Episode 2

- 01 Michelle: Now, (340 Hz, 78 dB) (0.9s) and now we have (411 Hz, 80 dB) (1.0s) another classification. (405 Hz, 78.0 dB) (0.5s) We have cells that can be classified as prokaryotic or eukaryotic. (395 Hz, 78 dB) (0.4s) What is prokaryotic? (425 Hz, 79 dB) (2.7s) What are prokaryotic cells? (389 Hz, 79 dB) (4.1s) Does any one remember what prokaryotes are? (370 Hz, 78 dB) (1.2s) What are they? (374 Hz, 80 dB) (13.3s) What are prokaryotic cells? (.) What do they have or what do they lack? (379 Hz, 79 dB) (0.5s)
- 02 Chad: [They are single cell organisms (236 Hz, 71 dB)
- 03 Driana: [They are single cell organisms

This episode seems typical of traditional teaching methods, where the teacher, Michelle, uses a questioning technique that strings a series of questions rapidly together after some premising. The entire nine (9) utterances during Michelle’s turn took a total of 45.1 seconds, including a total of 18.8 seconds of speech and a total of 24.3 seconds of wait time. The first four questions took a total of 6.6 seconds to utter with an average wait time of 2.0 seconds between each question and a very long pause (wait time) of 13.3 seconds at the end of question 4 (between questions 4 and 5) and less than a tenth of a second (represented by (.)) wait (lag) time between questions 5 and 6. Tobin (2005) recommended a minimum of 0.5 seconds as sufficient wait (pause or lag) time for talks to change hand when two or more participants are having a discussion. However, what was transpiring in this lesson was not a regular discussion but a speech pattern in which a teacher was trying to educe prior knowledge

from students about the concept she taught them the previous day by using call-and-response. Michelle was met with dampened response because students perceived her as yelling at them and many students literally shut down; which further elicited her emotive actions demonstrated in higher pitch that averaged 388 Hz compared to 236 Hz by students and a loudness that averaged 79 dB compared to students' average of 71 dB. Two students (Chad and Driana) responded together simultaneously with an utterance that lasted only 2.2 seconds and in such a low pitch, almost a whisper, that indicated perhaps lack of confidence in the answer they were volunteering.

Traditional teaching methods do not seem to foster and help majority of students gain and/or improve their confidence level. If such students' confidence level is tentative to begin with, even in a call-and-response pedagogy that Michelle employs in these episodes. Teacher's confidence levels (in herself and in her students) are not always fostered by the traditional teaching methods. Self-efficacy tends to diminish when the teacher is asking questions on concepts she has taught and is receiving lackluster participation back from students. Michelle indicated that her intention was to keep students attention focused on the teacher so they would not have time to get off task or engage in unnecessary discussions. She posits that she was afraid of students engaging in discussions because they might stray from the task at hand and it may be hard for her to get them back to refocus. As such, she does not sit down when students are in her class. For her, to do so, was to cede power and authority in the class. Unbeknown to her, students actually appreciate and value her sitting down and talking with them, seeing things from their vantage points. However, traditional/conventional pedagogical practices and professional discourse of teachers tend to frown upon such practices. Most teachers, often unconsciously, would rather maintain control over students than create dynamic environment conducive to building working relationships where leadership can be distributed in the classroom to help mediate and support classroom interactions across barriers of difference.

Michelle said that she started to realize that she was becoming more like her previous female science teacher, whose class she dreaded back in the 10th grade. This realization brought her to begin to ask herself why the traditional teaching methods she had been using are not working well for her and her students. After five years of using the traditional teaching methods, she began to reminiscence and to reflect on why her teaching was not better and her students struggle. Rather than blame her students, Michelle started looking at her own practice saying, "There has to be a better way to teach these kids to learn."

THERE HAS TO BE A BETTER WAY

"I was tired of putting on boxing gloves everyday, ready to fight my way through the day; and I was looking for a better way for me to teach and my students to learn," Michelle said in response to a question put forth at a conference where she and I presented on how her practices and those of her students have been transformed by her implementing cogen with her students in biology class. Not that Michelle

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was literally putting on boxing gloves in the classroom nor was she getting into boxing matches with her students. She was explaining metaphorically how much of a struggle it was for her, as a teacher, to work through the day's lessons with all that usually occur in her culturally diverse, multi-grade biology classrooms where the traditional methods of teaching do not yield the successful outcomes she desires.

Rather than blame her students for lack of efforts and motivations or blame the systems and society, Michelle thought if she could learn more and improve her pedagogical knowledge, she would be able to do a better job of finding ways to afford her students' success. She said to me, "If they are successful, that's when I am successful and whatever I have to do to make my students successful is what am searching for. The old ways of teaching do not work well for these kids. I am searching for a better way. Not a one size fits all."

PRE-COGEN PREPARATIONS

In preparation for cogen intervention, Michelle informed her biology classes that she was back in school and was being introduced to a method of teaching and learning called cogen and that she wants to try it out in her classes. She informed students that their participation would be voluntary; however, whatever decisions for changes are agreed to at the cogen would be implemented in class and may positively or otherwise affect everyone. As she said, "I gave them all of my reasons and 6th period was the class that was most enthusiastic about it. So, I invited all students to come and participate and I told them that our focus for the first cogen would be on my classroom practices that were contradictory to learning and teaching." She requested from students their cooperation by asking them to sign the assent forms and by taking the consent form home for their parent(s) or guardian(s) to sign. Michelle also called parent(s) and guardian(s) to follow up and to let them know about her plan and to seek their support by signing the consent form. At our first meeting, one of the parents demonstrated her support by sending us a small tray filled with home-baked cookies. The school administration, the principal and the two assistant principals, was equally informed and gave their consents and supports enthusiastically.

Capturing interactions on video camera

I provided Michelle with a video camera to capture one of her 6th period lessons as classroom interactions unfolded. The intention was to review the pedagogical practices that were enacted by Michelle and her students together and to generate vignettes that would be salient to Michelle and also to her students. This would then be used as point of mutual focus once we begin to gather in small group discussions that constitute our cogen meetings. The captured video of pre-cogen classroom practices then becomes our baseline for comparative analyses of coherences, contradictions and transformations in Michelle's and her students' practices. By capturing audio and videos of classroom interactions and that of cogen meetings, we have renewable

source of data that we could visit again and again to understand the unfolding praxis that was taking place in the social space of the classroom and cogen as Michelle and her students enact social life actions in the classroom.

We analyze interactions and transactions captured in the videotapes for gestures, facial expressions, body movement, locations and orientations; emotions expressed in turns at talk, time at talk, wait (lag) time between time at talks for pitch and intensity of utterances. We try to understand the sociocultural significance and effects of these parameters and how they affect power relations (Bourdieu 1997) between teacher and students and among students as we look into schema and its associated practices (Sewell 1999), capital exchange cycle (Bourdieu 1986), agency, passivity and emotions (Turner 2002) of participants and the application of emergent theories in explicating our findings (Tobin 2006b). The aim is to understand change in ontology.

TRANSFORMING PRACTICES THROUGH DIALOGUE

Reassessing experience through students' evaluation

Michelle has been a reflective practitioner all the time she has been teaching at *Fairness* high school. How be it, it had mostly been her views and self-evaluation that has guided her practices. In some ways, self-evaluation could tantamount to self-deceit and self-rationalization. She had exchanged views with her colleagues and has asked for their opinions on her practice. She had often been told, “don’t worry about it. You are doing the best you could under the prevailing circumstances,” she said to me. She has received evaluations from her administrators who gave her passing grades, she rightly deserves, with a few suggested corrections to be made here and/or there. Left to other teachers, these would have been sufficient. However, Michelle knows deep in her conscience that she is entrusted with the lives of youngsters she impacts every day. She knows she could and wants to do better in getting her students to learn, achieve more, and be successful.

Being true to her convictions, Michelle decided to take the bold extraordinary step of seeking honest evaluations of her classroom practices from the group that matters most and that teachers dreaded most; those that on daily basis are the unavoidable recipients of her practice as it unfolds in the classroom. After all, she has been struggling to teach them science; and they put forth efforts to learn science from her. A teacher, who wants to be successful, needs to do two mutually inclusive, dialectically related things in the classroom; namely: 1) teach the contents, and 2) learn how to teach the contents by learning from the students about how students want to learn. In essence, both students and the teacher are recursively teaching and learning from each other about each other. Then it becomes salient for teachers to recognize that in order to teach the contents effectively, they need also to learn about the needs of their students by asking their students. It is also good that for students to meet their goals in the classroom, they not only learn from the teacher and each other but, “teach” the teacher and each other about each other. To do so effectively requires a dialogic engagement, as suggested by

Freire (1970) in a third, interstitial space (Bhabha 1994), void of restrictive, hegemonic structures of the classroom, such a space as created in a cogen; a place where new or hybridized culture is produced (Tobin 2005), where canonized science discourse can be creolized as argued by Martin, Bayne and Lehner (2007).

In reassessing her own experiences in the classroom, Michelle engaged her 6th period biology students in small group discussions (cogen) in order to seek their assessment of her classroom practice as they are the ones directly affected by and involved in what was going on in the classroom. She also wanted to learn (get them to teach her) more of and about who they are beyond the façade (persona) they display in the classroom. She wanted her students to learn more about her socioculturally beyond the subject matter she teaches them and to unmask the façade (persona) she also puts forth in the classroom.

Affording and expanding students' agency

When we (students, Michelle and I) came together in the interstitial space to cogenerate ideas about her practices and classroom activities around science, I was there as a participant observer, she asked her students for their honest opinions and active participation in evaluating what was going on in the classroom and why. We, Michelle and I, showed the students video clips (vignettes) of the previously recorded lesson in which Michelle taught the way she thought she was supposed to teach and have been teaching. Students, leery at first, gradually warm-up to the idea of critically reviewing the lesson they had recently experienced with her. We played the vignettes over a few times. Students ask to see specific segments (frames) again and again. We watch the clips in slow motion or speed it up as needed. Participants delve into discussions and began to analyze what they saw and how they thought things could be improved. They were sincere, respectful, but dauntingly direct as exemplified in Episode 3.

By seeking students input into her classroom practice, Michelle was not only expanding her students' agency, and in some ways her own, but, in addition, she was expanding students' roles in and responsibilities for actively participating in their own learning. For these to be effective and productive, classroom rules that structure interactions and transactions are made negotiable because structure and agency, agency and passivity exist in a dialectical relationships and recursively influence one another (Sewell 1992, 1999) for transformation to occur.

SOME OUTCOMES OF COGEN

The use and effects of the “teacher’s voice” by Michelle have been discussed earlier. Here in the episode 3 below, she talks with cogen participants about how the review and discussions generated by some video clips of her classroom practice, at cogen among educators in which she participated, transformed her understandings of her pedagogical practices.

Episode 3

- 01 Michelle: And it was, it was really interesting and it opened my eye (217 Hz, 70 dB) (0.6s) to a lot and Taylor said, "you are not screaming at us." (202 Hz, 67 dB) No, I, I had a reality check (219 Hz, 71 dB) (0.9s) and it's, it's not, uhmmm, (220 Hz, 72 dB) (0.2s) ((Taylor reacts with excitement and laughter))
- 02 Taylor: (inaudible) (302 Hz, 70 dB)
- 03 Driana: Hew! I caught that too.
- 04 Taylor: Hew! (.)
- 05 Driana: So excuse me! she's not yelling no more (298 Hz, 71 dB) (1.2s)
- 06 Michelle: and you know, (233 Hz, 70 dB) (0.9s) for me, (259 Hz, 70 dB) (0.7s) I thought that the projection (231 Hz, 70 dB) (0.8s) Was (0.5s) what was needed (0.2s) for you all to hear me and understand; (0.3s) but it really wasn't because it's still very effective (232 Hz, 72 dB)
- 07 Taylor: we heard you, ha, ha, ha, ha, ha ((amidst laughter by both Taylor and Driana)) (0.4s)
- 08 Michelle: it's still very effective with a (224 Hz, 70 dB) (0.5s) lower voice; (.)
- 09 Femi: It's Ok (0.2s)
- 10 Michelle: with the lower voice (230 Hz, 72 dB) (0.2s) and, (208 Hz, 70 dB) (1.2s) I don't know; it's just; it was, it was a wonderful experience for me. I was nervous so, (231 Hz, 70 dB) (0.3s) you know, am like many of you (215 Hz, 68 dB) (0.3s) on some days when someone asks you to say something or somebody asks you to come to the board (207 Hz, 66 dB) (0.2s) and you are a little nervous; well, I got a chance to be in you guys seat. (208 Hz, 70 dB)

Michelle had a chance to review her practices with others present and got feedbacks that helped in her transformation. She also demonstrated courage by sharing the outcome with her students in ways that generated collective understandings, which opened doors for sharing knowledge with each other. She acknowledged the comments of her students and a plan of action was negotiated whereby a student serves as a "referee"

during class and would politely alert Michelle with a “time-out” hand signal so she could reduce the level of her voice if and when she raised it too high.

This episode also confirms the notion described earlier that Michelle’s utterances when teaching were very high and amounted to “yelling” as claimed by her students. In this regular conversation between Michelle and her students during cogen (a shared space void of hegemonic tensions), the pitch and intensity displayed were much less (average pitch of 223 Hz and intensity of 70 dB) compared to an average pitch of 370 Hz and 77 dB in episode 1 and 388 Hz and 79 dB in episode 2, indicated on previous pages. In addition, Michelle was able to recognize and accept that lowering the pitch and intensity of her voice was still effective (see utterances 06, 08 and 10).

OPPORTUNITY TO COTEACH WITH MICHELLE

Cogen participants informed Michelle that there were times when they felt that students could explain some concepts better by using youth languages, rather than canonical languages, to get the salient points of the concept across better. They also sought for opportunities to work with Michelle to co-plan and coteach lessons with her (Roth and Tobin 2002). Students felt that by being actively involved, they could suggest ways to make lessons more engaging and interesting. They wanted to actively participate in their own learning rather than just being passive recipients of learning. Students indicated that it would motivate other students to get involved in class work. They thought it would also give Michelle a break and allow them to demonstrate what they know and are capable of knowing and doing while sharing responsibilities in their classroom community. Students were willing to prepare for class “since in order to teach something, one has to study it harder,” as one of them puts it. This brought back a flood of memory of similar experience Michelle had with Dr. Dontfail, one of her professors back in college. Weird as it felt then, Michelle recalled fond memories. She remembered that it was the class where she participated most effectively and really learned well. She recalled coteaching some of the lessons with Dr. Dontfail and how proud she was of herself and how other students sought her out for peer tutoring.

Michelle became more confident and agreed with her students to try out coteaching. She and student participants negotiated plans of action. Team leaders were appointed per table and they worked together with Michelle. They co-planned the lessons with her. Each student, (coteacher) selected parts of the topic, prepared to teach it, sought for resources from the Internet and their textbooks, following Michelle’s guide. She facilitated the process. It was so much fun to watch. Some student coteachers struggled while others were able to deliver and explain their part of the topic very well. Teaching and learning became a form of shared responsibility. The positive emotional energy and entrainment that were ritualized (Collins 2004) became contagious. For example, the class had rewarding experiences in a genetic lesson and activity where students created marshmallow babies similar to Reebops displaying cogenerated knowledge and clearer understandings of mitosis, meiosis, chromosomal crossovers, phenotypes

and genotypes, etc. The coteaching trial provided so much learning opportunities and resources for structuring the class and students' practices. Students learned how difficult teaching could be when their classmates do not behave well. They were able to see things from the teacher's vantage point and many changes were suggested for the next time. The whole class agreed to coteach multiple times, team after team had chance to participate successfully.

How we want to learn

Students became empowered to make suggestions to Michelle. They suggested that sometimes her way of teaching was tedious and overbearing to them; that she often repeats the same things over and over almost to the point of redundancy, causing them to freak-out and shut down, as exemplified in episodes 1 and 2. They wanted her to let them know when and what things are more salient than others. They wanted more hands-on activities; field trips, such as visits to informal learning places, museums, nature and science centers, local arboretum, etc. Students wanted to read from their textbook more and summarize what they learn and share it as team members. They suggested using interactive Internet resources such as Brain Pop®, simulations like those at Franklin Institute website; use of Internet pop-quizzes, games and animations that relate to the topic and others interesting tools that could help them learn in addition to the textbooks. They thought it would be better not to disband impromptu lab groups when they return to class so they could explain what they learn in the lab.

Students were able to exercise agency to structure and restructure classroom teams without disbanding the original table-based nuclear teams, which they used as their "home team." They had the flexibility to move around and form teams that work best for the topic at hand; that way, they form a dynamic community of learners across existing barriers of difference, get to know and appreciate each other better and access each other as individual and collective resources. They sought more challenging tasks than the textbooks suggested. Michelle and the students agreed to plans of actions that enriched students' learning and built solidarity around the notion of constructing "small family where you are not afraid to say the wrong answer anymore, because you know that your team mate or another student in the class will help you get the correct answer," as Scarface, a student, puts it at a conference presentation. Another student, Smiley, puts it in context when she said, "we control ourselves better, now. It is not "control over" but "control with" other students; we, students, controlling ourselves by ourselves. If a student is acting up, another student in the class can say, "yo, homie, cool it; we want to learn;" and the student acting up calms down."

Empathy and care for others

Michelle wrote in her fieldnote after cogen, "they all agreed that the majority of their classmates are staying on task and all of them are more engaged. Smiley said before

the cogen that she would not have ever asked Scareface or Shaggy for help because she thought they were not serious students that didn't know the [science] content. She found out differently when Scareface and Shaggy were coteaching a lesson on diffusion and osmosis. The entire class started viewing these two students as two class intellect[ual]s." Peers began to access Scarface and Shaggy as resources. In doing this, students appropriated the capital exchange cycle, theorized by Bourdieu (1986), which instigated positive emotional energy and entrainments in accordance with interaction ritual chain postulated by Collins (2004).

Also as students began to identify with success, they started to behave better, their self-identity improved and they joined in to contribute to make their class experiences better. For example, a female student from the 3rd period biology class became concerned that most of her teammates were not always in class; she often ends up joining other teams. She noted that other teams who are complete are more productive and do better in class activities. She believed she could do much better if members of her teams stop cutting classes. So, she came up with an idea she called "bring a friend" as part of a plan of action generated during cogen. Other students and Michelle supported her idea. Team members went after those students on their team who are "cutters." They went to notable cutters' hideouts and literally dragged them back to class to make their teams complete and more formidable. Other classes soon joined in. Cutters were welcome back into class with collective effervescence making them feel welcome. Members of the class shared their notes with "cutters," tutored them and brought them up to date with lessons they missed. Michelle agreed to have "cutters" make up tests and exams if they agree to stop cutting classes. By the end of the first two weeks of executing this plan of action, many "cutters" were brought back and stayed in class.

Other classes started to exhibit "cogen envy" as they craved and wanted the type of solidarity and community 6th period has developed. To accommodate these other classes, we conducted some cosmopolitan, across-class, lunch-break cogen where all classes came together, facilitated by 6th students. Students had opportunities to talk with students exchanging ideas about what they need to do to succeed in class; these cogen became self-reflecting moment for many students. Students who taught by Michelle in previous years joined in asking, "how come you didn't do this when I was here?" Students testified to the fact that Michelle became more amenable and innovative in her teaching. Smiley wrote in her reflections, "The cogen that we have after school was a great opportunity for the teacher and students. I believed that these cogen changed everybody. It was a little difficult at first. But we constantly made changes. And at the end of cogen we all shared goals that we wanted to accomplish; and our goals became a success. The cogen that [were] held started with just sixth-period but they started getting so good and we wanted to experience with other classes and now instead of sixth-period, all biology classes are participating and putting in input. The cogen are very helpful; and since the beginning of the school [year], a lot in the class, students and teacher, has changed."

CRITICAL PEDAGOGY REQUIRES ONTOLOGICAL CHANGE

“The fundamental commitment of critical educators is to empower the powerless and transform those conditions which perpetuate human injustice and inequity” (McLaren 1988). We believe that such fundamental commitment requires educators’ ontological transformation. Michelle, as indicated in Episode 4 below, manifested such ontological transformation. For example, Michelle was not cognizant of the fact that sitting down with her students when interacting with them during lessons profoundly and positively changes the dynamics of their working relationships in the classroom. She used to be afraid of sitting down at the same table with her students (utterance 02). She does not sit down at her own desk when class was in session for fear of losing control or of being seen by students as a softie (confirmed by Taylor in utterance 12). As one of the new cultures produced during cogen where we all sat together, and saw each other at the same eye level, to tackle classroom issues, Michelle’s ontology on this way of acting changed. This change was then unconsciously reproduced and evident in her classroom interactions. Driana noted this transformation (utterances 12, 14 and 16)

Episode 4

- 01 Smiley: So, do you see a change in, like, your teaching skills?
- 02 Michelle: Do I see a change? I feel that I have made change[s] . I want to continue to change because I think, uhmmm, every situation requires something differently and every day is not the same day. But my ultimate goal is not to do what we saw on that video, me talk at you; I want the interaction; and that would be my goal. Smiley said that she would love to see everybody doing their work. But for me it’s not just the silence; I used to be afraid of the talking. But if you go around the group, it’s a meaningful conversation about the content; that conversation has substance. That’s what I, that’s what I enjoy; and it’s happening. If you guys take a second; if each one of you, say on Monday, step away from your group and just go ear hustle, what you guys to call it, and listen in on other people’s group, you will hear that there are meaningful conversation going on about biology

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- 03 Femi: that's right
- 04 Michelle: and for me, that's wonderful; and guess what? You are having these conversations, and who is not yelling at you?
- 05 Taylor: =You ((Taylor pointing to Michelle))
- 06 Michelle: Who is not repeating the same thing four or five, sixth and seven times
- 07 Taylor: [=Or speaking in our ears] ((Taylor and Driana talking together, indicated by [], excitedly))
- 08 Driana: [=But you do come around] now. You come around to groups. You don't stand in front of the room all day and yell; you walk a: : ro: und now; you don't just stand in one place; you go around to the groups; you [talk to the groups]
((Driana placed heavy emphasis indicated by colon on her words))
- 09 Taylor: [not just stand there]
- 10 Driana: Yea! You sta: nd there and start yelling and then talking
- 11 Taylor: It would be the same spot; there, there, [right back there and then go over right here by the board] ((pointing to locations in the room where Michelle is accustomed to standing))
- 12 Driana: [in the back and then go right there] ((Both Driana & Taylor turned around pointing to the same locations where Michelle habitually stands; Michelle smiled and then started laughing, almost embarrassed that these students could identify her habitual locations)) And now she goes around to each group, like a: ro: und, and now because we are doing this, she'll go to the groups, sit down, have a sit!; talk to the groups, then [she'll, sit down] ((head nodding to confirm emphasis with both hands pointing and motioning downwards; Femi also nodding with Driana))
- 13 Femi: [=sit, sit down!]
- 14 Driana: [=Yes, sit down

- 15 Taylor: [=She used to be like this to take the roll. ((Taylor stands up to demonstrate how Michelle used to stoop over her computer to watch them and take attendance; Michelle's gleefully smiles and laughs)) Now she actually sits in the chair.
- 16 Driana: =Yes! and she'll start talking to us and she'll gets up and she'll ask us, "are we ok?" She doesn't be in the front; she'll be sitting down with us. Then she'll, then she'll keep going around to every group. Then she'll start talking to everybody. Then she'll let everybody start doing what they have to do.

The exchanges above are evidence of the ontological changes that Michelle has made. It became apparent that students value and appreciate the changes she has made. Driana's voice (utterance 12) was imbued with emotions (indicated by the double exclamation marks) when she said, "she'll go to the groups, sit down, have a sit!!" It was not apparent to Michelle that not sitting down at table with her students created conditions that perpetuated inequity for the students. However, through cogen, she was able to transform such practice without being conscious of it. This adjustment to her practice profoundly transformed how she interacted with her students and how they responded to her. The working relationships in the classroom were transformed for good and an environment conducive to learning of science was created as evidence of improvement in state's benchmarks for measuring student's achievement in biology indicated. In addition, marking period grade averages improved. Attendance increased and remained above 90% for the 6th period class. Michelle became a bricoleur of human, science content materials and pedagogy as advocated by Sharma (2008).

MOVING FORWARD

By seeking and accepting her students' evaluations of her practice and formulating plans of actions, Michelle transformed the culture of interactions (Collins 2004) in her classroom. According to Sewell (1999) culture is schema (structure) and its associated practices. Sewell conceptualized that structure is a dynamic, continually evolving matrix of a process of social interactions. In essence, the way an interaction is structured determines the practices associated with and within the interaction; all of which are imbued with emotions that could be positively or negatively valenced (Turner 2002, p. 22). Therefore, schema (structure) and its associated practices acting recursively demonstrate dialectical relationship, which act in ways presupposing each other. Structures, includes material, human, roles, responsibilities and symbolic resources, is dialectically related to the power to act (agency) within the encounter. The power to act (agency) within an encounter (interaction) is also mediated by access

to and ability to appropriate such resources, which in themselves are tools needed to enact agency, as argued by Engestrom (1999) in articulating activity theory.

Listening to her students and implementing their suggestions together with them is a transformative ideology that aligns with Freire's (1970) notion of "authentic" education involving dialogic engagement of teacher and students; and it is the type of conscientization advocated by Freire that liberates both the teacher and her students. In addition, this ideology of multiple/shared perspectives (polysemia) and multiple voices, not just premising teacher's voice alone, but interjecting students' voices (polyphony - multiple-voice constructs of dialogues) provide opportunities for learning from the "silent majority" about what and how they really want to learn (Tobin 2006a). In agreement with Kincheloe (2008), the multilogicality of this approach becomes the seedbed for teachers to bricolage pedagogy and content and "work for the educative purposes of students," in an urban science classroom, according to Sharma (2008).

By leveling the power structure in cogen encounters, Michelle enabled and expanded her students' agency to discuss and to cogenerated with her the effects and outcomes of her practices on them. She also expanded her own understanding of why her students act the way they do. Individually and collectively, teacher and students were able to negotiate amicable teaching and learning practices that foster their individual and collective positive and productive experiences in the classroom. It became apparent and beneficial to all participants (stakeholders) that the new culture generated in the field of cogen was ported across the porous boundaries into the science classroom. Such new and/or hybridized culture was then reproduced and transformed (Tobin 2005) in the nested field of the science classroom and in other fields of social encounters.

Rather than lose control as some teachers feared, Michelle gained the respect and admiration (symbolic capitals) of her students. Respect, according to Anderson (1999), is an important ingredient in an encounter particularly for urban youths; as it is "fought for and held and challenged as much as honor was in the age of chivalry" (p. 67) on their neighborhood streets. It is fought for in subtle or substantive ways, in form of resistance, in urban classrooms. Teachers who respect students, afford and channel their agency in positive and productive ways gain respect, cooperation and collaboration in return. Giving and accepting respect as a resource help the teacher and her students build solidarity and sense of community in her classroom as exemplified by Michelle and her students. The fact that their teacher sought their opinions and enacted their suggestions provided sense of place, an identity, (Kincheloe et. al 2006) and collective responsibilities for solidarity (Collins 2004) in their classroom community.

THE ROLE OF COGEN IN CONSTRUCTING A SUCCESSFUL LEARNING ENVIRONMENT

"If teachers exercise valued interests in their students' learning and instigate students' involvement through meaningful, collaborative dialogues, students will respond positively and participate productively knowing they have investments and ownership in the learning processes that is taking place in their classroom and we would all benefit

and be successful,” said Michelle as we discussed the progress made during the period she implemented cogen in the 6th period biology class. Among other lessons learned was the fact that she would not have accessed the knowledge her students have about her teaching, understand the intricacies of the sociocultural complexities of their lived-experiences and how to use these information positively as resources without casting deficit on the students. “I may not have taken them seriously enough, had they just complained about it, to the point where their suggestions would transform my way of teaching and their ways of learning what I have to teach them. I might have resisted them. It makes a lot of sense to talk meaningfully with them about our shared experiences in the classroom. I am happier and they are happier for our successes and what we have all contributed to it,” Michelle said during a conversation.

We conclude the chapter with the following quote from Rawr, a white female student, which captures the essence of our research.

Before we started doing cogen in class, a lot of the students were lost and failing. Students would just put their heads down, and sleep for the entire period. Michelle would get frustrated and would talk loudly and repeat things over and over. When we started utilizing cogen in the classroom, I was really skeptical. I didn’t think it would make any difference. But Michelle started asking what we would like to do, and what is the best way for us to learn. Students started to participate, and give her constructive criticism on her teaching methods. Now, everyone in the class participates, and there are a lot of students who raised their grades. When one of us starts to become off task, the class always pushes them in the right direction. Our classmates make sure that we succeed. Cogen helped this class.

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CHRISTINA SIRY & NICOLE LOWELL

17. EXPLORING THE COMPLEXITIES OF LEARNING TO TEACH

Collaborative Methods and Participatory Structures in Teacher Education

Abstract In this chapter we focus on a science methods course for pre-service teachers that has been structured to provide a field-based approach to learning how to teach science at the elementary level. Utilizing coteaching and cogenerative dialogue (cogen) (Tobin and Roth 2006), this course is built around collaboration and shared classroom experiences, in order to create opportunities for pre-service teachers to engage in teaching science together in the authentic settings of elementary classrooms. We, the authors of this chapter, are the course instructor and a pre-service teacher participant in the course. Through a multi-voiced approach to writing, we explore cogen within teacher education as a pedagogical space to facilitate collective responsibility for elementary science teaching, and to support participants as they work towards becoming teachers of science.

LEARNING TO TEACH SCIENCE IN ELEMENTARY CLASSROOMS

Much has been written in the literature on pre-service teacher education about the need to provide supports through field-based experiences (e.g., Davis, Petish, and Smithey 2006). The course we explore herein was a science methods course for pre-service elementary teachers that was developed to be field-based, with a goal of having participants learn about teaching science by collaboratively planning and teaching science to children. In order to contextualize this research, we first begin with an explanation of the structures of the course, and elaborate on the role of co-writing in co-constructing understandings.

FIELD-BASED EXPERIENCES IN ELEMENTARY CLASSROOMS

Our course took place at a small private liberal arts college in Metropolitan New York, and our roles in the methods course were that the second author, Nicole (Nicki), was a pre-service teacher, and the first author, Christina (Chris) was a faculty member. The education courses are typical for a US teacher preparation program leading to a Bachelors of Arts in Teaching degree, with pre-service teachers first taking educational foundations, then moving through a series of content area

“methods” courses that incorporate field observations, and then culminating with one semester of student teaching at two different elementary grades.

The science methods course was generally the first content methods course of a series that undergraduate pre-service teachers progressed through, including math, social studies and literacy. When Chris began teaching the course, she redesigned it as field-based in order to reinforce the complexities of teaching science at the elementary level. In particular the design was intended to emphasize the perspective that there are not specific set ways in which children respond to being taught science. To that end, participants collaboratively developed a 10-week science unit and cotaught this unit on an ongoing weekly basis to an elementary class.

Coteaching was implemented so that all participants were teaching together in the same classroom, and each shared responsibility for the success of the lessons taught to the children. The classroom teacher suggested the broad topics for the unit, and pre-service teachers developed the foci and activities for the individual lessons, with Chris’s support and in ongoing consultation with the teacher. Thus, coteaching science unfolded as pre-service teachers chose the focus of their lessons and planned collaboratively, which played a central role in how we approached learning about teaching, and learning about science. As the unit began to take shape, the lessons were taught weekly and we all participated in the classroom, generally with three people facilitating an introductory discussion with children; a pre-service teacher, the classroom teacher, and Chris. This approach to coteaching focused on pre-service teachers working together to learn how to teach science “at the elbow of others” (Roth and Tobin 2002). After the introduction, the children worked in small groups with two pre-service teachers facilitating their investigations. In this way, all participants were centrally involved in the teaching of all lessons, while at the same time, each person experienced being the “lead teacher” by organizing and teaching the introductory component for a lesson. As such, coteaching became “a method for explicitly drawing on opportunities to learn a practice by doing it collectively with others” (Martin 2009, p. 574). We have come to refer to these as *collaborative field-based methods courses*, to emphasize the focus on learning to teach in collaboration with each other through field-based experiences. The support that emerges from coteaching can provide all participants with opportunities to discuss and reflect upon improving their own praxis (Tobin 2006). To that end, a second day each week the participants met on campus to reflexively deconstruct their experiences from the elementary classroom within cogen, which we elaborate on in the next section.

COGEN AS NECESSARY TO COTEACHING

Cogen are conversations between stakeholders in educational settings around shared experiences that provide an opportunity to revisit events. They are characterized by different ways of thinking and of being, and they have been theorized as seedbeds for new culture (Tobin 2014). These dialogues have been used in a variety of contexts and are intended to cogenerated success, and such success can take a myriad of forms.

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In science teacher education specifically, they have been found to promote positive social interactions among students and teachers (Tobin, Zurbano, Ford and Carambo 2003). They are a fundamental piece of the process of coteaching, and “arose as the dialectical partner of coteaching” (Stith and Roth 2008, p. 12). As such, they support coteaching by providing theoretical and practical support for teachers who work together in classrooms and then analyze the events of lessons together. In the specific situation of our course, we worked to cogenerate plans for improving our teaching of science, the learning of science, and our own learning about teaching science. As we collaboratively planned and facilitated lessons each week, we regularly stepped away from the classroom to engage in cogen in an effort to generate local theory about our shared experiences.

Cogen provide opportunities to “identify and review what seems to work and what does not, especially practices and schema that disadvantage participants” (Tobin and Roth 2006, p. 81). In our course, cogen sessions were a primary emphasis of instruction as they were the organizing structure of the syllabus, and served as an approach to creating shared meanings between individuals. Mikhail Bakhtin (1981) explored dialogue as much more than simply the words in conversation; a dialogic perspective indicates recognition of the multitude of possibilities inherent in human interaction. Bakhtin wrote of “utterances” as central to communicating, and which have specific meaning that is “social, historical, concrete, and dialogized” (1981, p. 433). In the positioning of discourses as dialogic, each “utterance is a link in a very complexly organized chain of other utterances” (1986, p. 69). Such dialogism highlights complex relationships between language, interactions, and social transformation, and is what we sought to illuminate through cogen. Through Bakhtin’s lens (1986), the utterances within a dialogic exchange can never be repeated in the same way as each utterance always creates something new. This dialogic relationship exists among communication styles in speaking as well as those in writing. In the acknowledgement of the multiple functions of dialogue, we incorporate a variety of genres in our cowriting of this chapter, to present our diverse perspectives and represent some of the complexities of social life within our course.

COWRITING AS AN APPROACH TO LEARNING ABOUT LEARNING

Cowriting has supported us in recognizing the difficulties as well as the possibilities in sharing responsibility for teaching and learning to teach and as such, we include in this chapter our different experiences and perspectives in being the “student” and the “teacher.” Cowriting has been much more than simply a way to put words on paper. Quite the contrary, the collaborative construction of words and meanings that emerge from coauthored texts can serve to undo hierarchies and “create a literary, temporal, and power literate space” (Siry and Ali-Khan; Ali-Khan and Siry 2011). In the collaborative creation of this chapter, we counter the idea of a singular “truth” and through our layered approach to cowriting we have learned about our own

learning. This has been a lengthy process, one that began with our participation in the course (in fall 2007), continued through to a research group (in 2008), and has culminated in the framing and layering of text for this chapter (during 2009). As we write these words, it is 2010, and we marvel at how our learning shifts and changes with every word, with every utterance that emerges from our interactions around this process and product of creating cowritten text.

We have chosen to approach writing this chapter through various layers in order to present several perspectives. Richard Quantz and Terence O'Connor (1988) suggest that a Bakhtinian concept of dialogue requires that unmerged voices be presented in a way that the multiple voices maintain their integrity (p. 108). Thus, in the sections that follow, there are three layers to our writing. There are sections that emerged from our research meetings in which we analyzed and theorized our experiences together. The actual text for these was written mainly by Chris and came from discussions around our course participation. At these points our perspectives often merged, and we use the written voice of "we". However, within the creation of this "we" voice, there are specific points in which it was necessary to present the unmerged voices called for by Quantz and O'Connor. We do this through text boxes, intended to interrupt the flow of the text, and to insert our direct responses to specific points of analysis in the chapter; "to disrupt the narrative of "we" with the thoughts of "I" (Siry and Ali-Khan; Ali-Khan and Siry 2011). Lastly, there are several points in which we engaged in short written exchanges around our analyses, which allow us to retain our individual contributions, and present the diversity of perspectives we have gained from our work together. These are prefaced with our name, and set off from the rest of the text with italic font.

We see this multi-layered approach to cowriting as facilitating our shifts from particular experiences in one semester to a greater applicability for future teaching and learning. Each of the different genres we use served distinct purposes, as we seek to present a combination of our analyses grounded within our theoretical perspectives, layered with direct responses to the points we introduce. "Where there is a deliberate (conscious) multiplicity of styles, there are always dialogic relations among the styles" (Bakhtin 1986, p. 112). It is our goal to recognize and celebrate differences, and in using a diverse approach to writing educational research, we seek to push forward on generating theory relating to the co-construction of our own knowledge as emergent from dialogic encounters in our work with each other.

THE INSEPARABILITY OF THE INDIVIDUAL AND THE COLLECTIVE

Grounded in sociocultural theoretical perspectives, we consider teaching and learning as cultural enactment (Sewell 1999). A central tenet of sociocultural theory is dialectical relationships, which acknowledges that there are parts to social existence that constitute the whole, and they cannot be separated. Particularly salient to this work is the dialectical relationship between the individual and the

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collective. Through this lens, the individual and the collective are inseparable and mutually presuppose each other¹. In other words, we cannot look at the individual and the notion of “self” without considering the collective and the relationship to, and with, others. To that end, related components of this study have considered individual and collective experiences within the collaborative field-based courses, and examined the ways in which individual identities emerged through participation in the collective activities, while also mediating the formation of a community that continually developed and evolved (Siry 2009). In this chapter, we argue that the intertwined relationship between the individual and the collective needs to be better considered in teacher education. We contend that the current focus on accountability in teacher education has led to an individualistic focus that overlooks the collective.

<p>Chris: The focus on teaching together in classrooms is based on my beliefs that teacher education should recognize lived experience rather than merely a set of strategies or methods that serve to perpetuate notions of knowledge as fixed, defined and rigid. In contrast, through cogenerated many of the structures of the course, we together recognized the fluidity of teaching and learning, and the personal, embodied nature of “becoming a teacher.”</p>	<p>Nicki: Through this structure for a course I felt like we were sharing our individual responsibility for teaching and also for learning about science, and it became a collective responsibility that we all had to live up to. The structure really solidified that each person had a claim and a role, and were together responsible for the fluidity and purposefulness of the course. It was truly an experience in which you received what you put in.</p>
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VALUING MANY PRACTICES

Many teacher education programs are responding to increasing standardization in schools by restructuring their focus on preparing teachers to implement scripted, prepackaged curricula (Sleeter 2008). A focus within teacher education courses on individual teacher experiences neglects the importance of acknowledging collective goals and the importance of group membership for learning. The purpose behind creating a flexible, emergent structure for our course lies in the desire to push back at this technical model of courses that present science teaching and learning as static, with clearly defined steps to be followed to ensure success. Quite to the contrary, science learning is complex and working with young children rarely follows clearly defined steps and procedures. Through experiences planning and coteaching lessons to young children, the unpredictability, energy, and excitement of teaching science can be realized.

<p>Nicki: The weekly cogen focused on developing understanding and connections particular to our experiences. Each of our conversations were organic, in that they grew out of our teaching experiences in the elementary classroom and focused on the learning of our students, as opposed to the fixed schedule of teaching topics that might occur in other methods courses.</p>	<p>Chris: Cogen was implemented here to change institutional culture and share responsibility for teaching and learning among the group. Cogen provided opportunities to get a sense of the diverse perspectives we each had on shared experiences, as we listened to, and learned from, each other. Although I was the instructor, I progressively ceded control of discussion topics each week.</p>
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Challenging the modernist Cartesian epistemology of practice that emphasizes a “best practice” approach to learning how to teach, Joe Kincheloe (2003) argued that the realm in which we live and work (and thus teach and learn) is “too multifaceted, complicated and culturally diverse for the implementation of universal approaches to professional practice” (pp. 14 -15) and it is this complex uniqueness of teaching and learning that our structure of coteaching and cogen sought to emphasize. Dialogue in this framework served to illuminate the multi-faceted choices that present themselves in real classrooms. This stands in sharp opposition to the composite (therefore fictional) and normative classroom of the “best practice narrative.” Paulo Freire (1973) promoted the value of critical thought as a substitute for “banking” education; the model of teaching in which knowledge is to be deposited in the learner’s mind by the teacher. Through a dialogic perspective “banking” is abandoned in favor of a rich, complex and nuanced reality in which classroom life is not static and teaching and learning are responsive endeavors.

RESEARCHING A FLUID COURSE STRUCTURE

Our collaborative research is part of a two-year study examining collaborative methods courses which followed a design experiment approach, framed through the work of Ann Brown (1992), who stressed that design experiments in educational research acknowledge the “synergistic nature” of classroom life (p. 141). As a design experiment, the study changed throughout to recognize the complexities of researching in classrooms. Thus, our teacher education curriculum and our research were interconnected and emerged with the other. In this process, participants directly collaborated to make changes to the ways the study was unfolding, as well as the curriculum in the classroom, and this ongoing interpretation of events allowed for a consistent evolution to better meet the needs of learners. Incorporating cogen into design experiments increases the possibilities to “catalyze and sustain curricular improvements” (Roth and Tobin 2004 ¶ 29). Suggestions were made in cogen and implemented in teaching as we collectively revisited changes while moving forward.

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Our data are drawn from a video database that includes all sessions for our course. Video files were digitized using iMovie and exported to QuickTime Player (Mac OS X) each week on an ongoing basis so that we could discuss classroom events in our cogen with the use of videos as needed. Additionally, pre-service teachers received copies of video vignettes throughout the semester. Once particular episodes were identified as interesting by any of the course participants, Chris transcribed them using Transana, an open-source, cross platform software for transcription. Our analysis of this video-based ethnography for this chapter began after the course ended, and initially consisted of examining interactions and analyzing conversations taking place between participants.

We began by discussing our experiences and considering what emerged for us individually from the structures of cogen and coteaching. We engaged in an ongoing process in which we individually viewed vignettes and then came together to discuss our differing perspectives. Over time, these conversations became directed towards analyzing vignettes with a focus on our own lived experiences as participants in the course. In working to arrive at a description of phenomena as we experienced it, we drew on Max van Manen's phenomenological perspectives, as "from a phenomenological point of view, to do research is always to question the way we experience the world, to want to know the world in which we live as human beings" (1990, p. 5). We also viewed vignettes together frame-by-frame to focus on evidence of non-verbal interactions that might indicate the mood of the participants, including, smiles, laughs, frowns, and other body orientations and gestures.

These analyses led to a broad initial focus on ways the combined coteaching and cogen afforded us opportunities to experience the complexities of the classroom, and be in a position to deconstruct these experiences with others, and as we began to conceptualize this chapter we focused on the overarching question: *What did the structure of coteaching and cogen enable in the context of a field-based methods course?* As we approached this question together, we found it worthwhile to first focus on the weekly cogen. In the following section we begin by describing structures that were active in shaping the unfolding of the collaborative course over 15 weeks.

COGEN TO SUPPORT COTEACHING

As we discussed earlier, cogen were implemented to support the ongoing coteaching of science in a second grade class. Our intention in this chapter is not to provide a guide on how to implement coteaching or cogen. Both have been well documented for success in a wide variety of fields and situations². Instead, we present the specifics of how *we* participated in coteaching and cogen, and focus our analysis on the ways in which a participatory framework was created that met our particular needs as a class. In doing so, we hope to encourage others to find new ways to work *together* around institutional structures, and to push back on the hierarchical notions

of “teacher” and “student” towards more participatory approaches to teaching and learning together. The offprint below represents a typical cogen, and seated around the table are seven pre-service teachers; from left to right: Barb, Kate, Olga, Kathi, Krista, Cara, and Nicki (the second author of this chapter).



Nicki: It just happened that we sat together like this. There was an unspoken expectation that we should be close to each other. It didn't come from Chris it came from everyone. This picture shows how we always sat, in a closed square around a table. Often times the furniture was different and we'd move things so we ended up together.

In this comment, Nicki highlights the ways in which participants sat in close proximity to one another. Cogen have been described as discussions intended to “cocreate new culture and / or amend that culture which already exists” (Bayne 2009, p. 515). In the evolution of the course, participants noted that they were experiencing bonding around their shared experiences learning to teaching science with young children, and the new culture that emerged within our course was one of solidarity. Randall Collins’ (2004) theory of interaction ritual chains has suggested that chains of successful interactions can lead to positive emotional energy and solidarity. We see this solidarity as a sense of belonging to a group, in this case, a sense of belonging to a group of elementary teachers of science. It is this solidarity that participants often referred to as a bond. Other components of this study have undertaken an analysis of indicators of solidarity in order to shed light on the emergence of solidarity among members of these courses (e.g., Siry 2009). Herein we acknowledge this sense of belonging and build on it to explore ways in which dialogic encounters within the collective mediated the experiences of participants. Additionally, we see that engaging students in cogen supported a reconsideration of the role of “teacher” and that as “student.”

COGENERATING SUCCESS IN THE SCIENCE METHODS COURSE

We now return to the question that guided our analysis, *What did the structure of coteaching and cogen enable in the context of a field-based methods course?* Our exploration of cogen as a pedagogical space within a cotaught course indicated that three outcomes emerged within the individual|collective dialectic over time. First, these conversations served to facilitate collective responsibility for elementary science teaching as participants took responsibility for the success of lessons.

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Second, participants within cogen provided support to each other, as they listened to and shared with their colleagues. Lastly, through these experiences, cogen supported participants as they developed understandings of teaching and learning science in classrooms together. We see these three facets as interconnected and inseparable in actuality. For the purpose of discussion, we pull them apart here, but we also note that within each aspect we find evidence of the others. Ultimately, we argue that there are connections between our participation in the collaborative course structure and our learning about science teaching, through an emergence of a combination of individual engagement in learning to teach science, and a collective sense of belonging and responsibility, and we elaborate in the following sections.

COLLECTIVE RESPONSIBILITY FOR TEACHING SCIENCE

One of the significant findings of our research has been that cogen afforded the emergence of a sense of collective responsibility for the success of science lessons. Participants spoke often and openly about their feeling of being able to positively enact the role of teacher, in that they were working on planning lessons as a group in cogen, which they would teach together. The cogen had various foci, generally relating to events that had happened in the classroom, as we sought to improve practice moving forward through discussions of challenges in previous lessons as well as the collaborative planning of activities for upcoming lessons. The following vignette is of cogen around planning a lesson. This 1 minute, 23 second vignette is from a longer conversation, and there are 7 pre-service teachers seated around a table, planning the second lesson to be taught the following week in the classroom. While it is typical of discussions around teaching upcoming lessons, Chris is not present. We begin with the entire sequence and then present our analyses of specific interactions to consider ways in which the group created meaning through dialogue, as they discussed an upcoming lesson and considered alternative possibilities for structuring science activities.

This particular semester, the science unit for our course was about plants, and was requested as a topic by Mrs. Romano³ to correlate with an existing unit she would be teaching on trees, in which she was planning to focus on diversity and adaptations of local trees. In this vignette, the group is planning the second lesson that we were to teach, and it was to follow on a lesson in which Nicki and Cara had introduced seeds to the children and begun an investigation of seed germination (a typical elementary grades science activity in which lima bean seeds are placed in plastic baggies with moist paper towels and taped to a window, so that the seeds' germination is visible). Krista's lesson was to be the next lesson, and she was hoping to focus children's attention on the ways in which the seed coats had opened, and the seedlings were emerging. At the point of episode 1, she had mentioned to the group that she wanted to teach the children the different parts of the seed, as she was thinking of having them open up soaked lima beans to find the seed coat, the "baby plant" (the epicotyls), and the "food" (the cotyledons). The episode below begins after Krista says, *So I thought I could show them a diagram of a seed.*

Episode 1

- 1 Barb: 0 are you going to dra:w the diagram?
02 Krista: I'm going to have it on the chart
03 Kate: I have a rea:lly random question. On the worksheet,
remember last time we drew what the plant looked
like, are they drawing this time what the seed
looks like?
04 Krista: Right
05 Nicki: should there be something separate?
06 Krista: that's what I:: was wondering. Do you all think I
should have a separate worksheet and then they can
draw what they see?
07 Nicki: I feel like we aren't going to have time for that-
08 Barb: unle:ss they predict what the seed looks like and
then AFTER that we can hold it up to a [seed]
09 Kate: [do] the seed drawings go in a journal?
10 Barb: in a scIence journal?
11 Krista: could they just Tell their answers to us?
12 Barb: or we can leave them with that. We could have them
do whatever you are thinking about and [then]
13 Kate: [But] you can' t-
14 Cara: just have it with us, and then if there is time at
the END we can
15 Barb: yeah, just like that
16 Krista: Ok:, so have it and it can be extra or we can leave
it for the teacher too
17 Nicki: then they can do it at another time
18 Kate: are you going to demonstrate how to open the seed
with them, or are they going to do it by themselves?
19 Olga: demonstrate (nodding)
20 Krista: okay, then we need to figure out how to do that.

In this episode, the group worked with Krista as she planned her lesson. They shared responsibility for the lesson, as they listened to her thoughts on possible activities, and provided alternatives for collective consideration. Within this exchange, the pre-service teachers considered Krista's idea to have a diagram of a seed on a chart. The group had control over the curriculum taught to the children over the 10 weeks, and they considered the ways in which the children interacted with activities in the previous lesson. At the beginning of this excerpt, Kate references the previous lesson

(*On the worksheet, remember last time we drew what the plant looked like, are they drawing this time what the seed looks like?* line 03). This prompted an exchange as to what might be best given the previous activities. Rather than attempting to present a “best practice” approach to teaching science, or distribute a “proven effective” curriculum for pre-service teachers to reconstruct in weekly lessons, the participants worked together to analyze and interpret events of the previous week in order to plan dynamic lessons that would be responsive to the needs of students and themselves as teachers.

There was an issue within this cogen around whether or not the children should draw a diagram of the seed, and if so, if it should be in a notebook or a worksheet. This might sound trivial, but in actuality, is quite a critical concern, especially for new teachers developing their second lesson. Constraints of time, space, and classroom management all become paramount in deciding how to organize activities. The exchange shows that Krista was open to others’ suggestions, and the group assumed responsibility for the activity, as each participant embraced responsibility for the other, and thus, for the success of the lesson.

Building on Kate’s question related to the previous lesson (line 03), Nicki asks Krista, *Should there be something separate?* (line 05). Krista responds positively to this suggestion: *That’s what I was wondering. Do you all think I should have a separate worksheet and then they can draw what they see?* Evident in this exchange is that the success of the lesson was their primary concern, and they supported Krista and worked together to coordinate the learning activities that were to take place in the elementary classroom. We end our discussion of this episode with what we see as a key indicator of the role of the collective, as Krista has considered the suggestions of the group, and comments “*okay, then we need to figure out how to do that.*” Accepting a collective responsibility means that all participants are responsible for all parts of the lesson. As such, the cogen provided a structure for airing opinions with one another as well as for sharing responsibility for the organization of the lesson.

<p>Chris: This vignette is unusual in that I was not present during this cogen. The unfolding of this dialogue, even without my “teacher” presence in the course, emphasizes the ways in which participants took ownership of their lessons as a collective endeavor.</p>	<p>Nicki: Krista was asking us important questions about her lesson. We were at the point where as a group we realized that coplanning a unit meant there had to be continuity. The questions she posed resulted in shaping the rest of the lessons in the unit as we recognized how connected it all is.</p>
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The enactment of these courses became a collective process, and we realized, as Kenneth Tobin and Wolff-Michael Roth have theorized (2006), that coteaching can increase the collective capacity of teachers. Our courses can be regarded as a collective achievement between all participants, as we coparticipated in the

organizing of the course and in negotiating our individual and collective roles. As such, we coparticipated in the social structure that was continually being constructed and reconstructed through our actions and our experiences situated within the course. In sharing responsibility for teaching and learning and collectively constructing our goals, we went beyond having moments where pre-service teachers can individually “take responsibility” to being able to share responsibility for the entire course.

SUPPORT FROM THE COLLECTIVE

Successful implementation of coteaching and cogen is supported through corespect and coresponsibility (Scantlebury, Gallo-Fox and Wassell 2007). An integral part of taking (and more specifically, sharing) responsibility is providing support to the other. There is a delicate balance between giving and taking that is individual as well as collective, and this was continually negotiated within cogen as they evolved over time along with the field-based teaching experiences. In the previous vignette, we highlighted the ways participants shared the responsibility for the success of the upcoming science lesson. In the vignette that follows, we see how sharing responsibility in this way provided support to Nicki as she taught her first lesson to the children. This cogen occurred after Nicki’s lesson, and the excerpt begins with Nicki mentioning that she had forgotten to have the students share their ideas with one another prior to beginning their science investigations.

Episode 2

- 01 Nicki: well I completely spaced on the buddy share (.) I
completely forgot
- 02 Barb: were you less nervous once you were teaching?
- 03 Nicki: Yea:h, I guess I was
- 04 Olga: you did a VERY good job
- 05 Chris: it was great (.) you were very together and SO calm
(.) it was really impressive for your first lesson
- 06 Nicki: it was different than I thought it would be (.) At
first, I was more nervous having you all there (.)
and THEN I was SO happy that you guys we:re there
- 07 Olga: yea:h?
- 08 Nicki: yeah, because there was this ONE point, where we
were switching from one thing to the other, and (.)
I don’ t know who I looked at I don’ t know but one
of you (.) but I caught SOMEone’ s eye and I was like
okay (.) I can still do this and I can keep going

Mrs. Romano had suggested this “buddy share” strategy; a technique she often implemented to immerse students in new topics. In buddy share, children were provided with a prompt of some sort, and encouraged to share ideas with the child next to them. Often they were asked to think of specific questions they had related to a new topic of investigation. The children would then come back together and some of the “buddies” would share with the class their conversations. Barb asks Nicki if she was less nervous once she began the lesson than beforehand (line 02) and as the group interacts, Nicki reveals that she initially was nervous to be teaching in front of her peers, yet ultimately it was reassuring to know that they were all there together (line 06).



This offprint is from line 01 from the transcript of this exchange, as Nicki (on the right, with her back to the camera) says, “*Well I completely spaced on the buddy share. I completely forgot*” and we now discuss our individual perspectives on this particular episode.

Nicki: This is the point where I had my first moment of feeling the shift from viewing myself only as a student, to a student and a teacher. I hold very high expectations of myself, however, my peers were able to bring my focus of the lesson to a point where I could determine what was positive and what I could change for the next time I taught this lesson. This moment was when I realized how helpful and purposeful the framework of this course was. I was fully supported verbally and nonverbally in the first lesson I had planned and taught. That support was vital to my learning and growth as a teacher. I was able to find the positives and negatives in the lesson I taught through this cogen with my classmates.

Chris: The participants are all looking at you, Nicki, with the exception of Cara seated directly next to you who is looking straight ahead. On your side of the table people have leaned forward, and there is eye contact from all members of the group. Drawing on Collins’ (2004) work on interaction rituals, I have previously examined how interactions can lead towards solidarity within a group. Collins explains how successful interaction rituals consist of entrainment of body language, a shared mood, mutual focus, and

physical co-presence. These successful interactions can lead to high levels of emotional energy, and sustained levels of high emotional energy can lead to solidarity among the participants. These components of successful interaction rituals are evident in this exchange, as is seen in this offprint.

Nicki: Our engagement wasn't always verbal, as even those people who were less talkative than others were engaged. One way this was evident is that people were focused on the speaker. At times as teachers we only believe our students are listening when they respond every few moments. However, when the quieter people engaged in the conversation it was always a point of view that added more to the conversation. Throughout the course of the semester the quieter students became more comfortable and spoke their opinion more often.

We have previously mentioned that the outcomes we consider from cogen and coteaching in our experiences were interconnected and inseparable in reality. We see here in this vignette and in our discussion of it the connection between engagement as a group and the comfort that cogen structurally supported. This engagement and sense of comfort appear to afford shared responsibility, and vice versa. We also see the interconnected, shifting, roles of listener and speaker in the Bakhtinian sense, as giving support and taking/sharing responsibility emerged with each other.

LEARNING TO TEACH SCIENCE

A primary intention of this course structure is to expand the roles of teachers through shared decision-making as they engage in cotaught lessons in a "real world" setting. Rather than covering a breadth of topics, we planned one unit in an area typically taught in elementary school. As pre-service teachers came to know one area in the science curriculum deeply, we discussed the value of learning fewer topics, but at a deeper level (AAAS 1990), and we explored unifying broad concepts of science. As we already mentioned, the topic for this semester was plants, and there were several concepts taught within this unit, including seed germination and plant growth, as well as decomposition. The course took place during the fall, and one of the activities the group had planned was related to pumpkins. In order to learn about the structures of pumpkins, the children investigated pumpkins that had been cut in half. In the lessons that followed, the pumpkins were left outside to decompose, and children then revisited the pumpkins to see how they changed. This following episode took place in between these two lessons, and we were discussing the mixed responses from the children to the pumpkins. The group had expected children to be engaged by handling the halved pumpkins, yet in actuality some of the children found the pumpkins to be not interesting at all. This exchange emerged within a cogen in which Olga mentions she was surprised that one of the students in her group was not interested in the pumpkin initially.

Episode 3

- 01 Nicki: ((to Olga)) you know how you said that the student wasn't into it, but then she got into it?
- 02 well, I really think the kids at our table didn't want to touch the pumpkin nearly as much as they wanted to touch the bugs.
- 03 Barb: our kids were totally IN the pumpkin
- 04 Kate: yeah, [right]
- 05 Cara: [uh] huh

Nicki: People seemed completely open to hearing others' opinions, whether agreeing or not. The trust is that the learning is happening; these conversations gave rise to the thoughts that occurred as a result of being in the classroom. Every person took on the responsibility of participating in the cogen, otherwise they wouldn't have been as successful and worthwhile for every-one involved. Every one of us accepted that there was a significant reliance on each other; we understood that our main focus was that the children understood science. Our lessons were purposeful for our students, and as a result they were purposeful to us.

- 06 Nicki: not mine (.) they were touching it from the outside, and then they were like, ew, that's gross
- 07 Olga: mine too- ((nodding))
- 08 Kate: I know that when I was little, I was NEVER allowed to be the one to carve the pumpkin. So, maybe to some of the kids, a pumpkin is something you look at from the outside. So maybe they've never looked inside.
- 09 Chris: so it would something REALLY unfamiliar?
- 10 Olga: and we noticed that a lot of the kids don't celebrate Halloween

It was revealed in this exchange that the children responded in quite different ways, ranging from disinterest (*the student wasn't into it*, line 01), to extreme interest (*our kids were totally IN the pumpkin*, line 03) to finding the pumpkins repulsive (*they were like, ew, that's gross*, line 06). As participants discussed events throughout the semester, it became clear that each person had different experiences with the individual students they were teaching. As they each brought their own perspectives to classroom events, cogen provided a space to share differing viewpoints and discuss the implications for teaching and learning.

The authenticity of the setting and the dialogues about real classroom interactions allowed those who were learning to teach to embrace the complexities of elementary teaching. Individuals were responsible for the success of the group as a whole, and as we enacted science teaching as culture within our course, we participated in a process that reflects the individual|collective relationship. Our learning was at the same time individual and collective. Shared meaning was created in cogen as different viewpoints emerged. We sought to have a polyvocality that led to a polysemicity, as simply providing a space for many voices isn't enough; there needs to be a recognition and an acceptance of multiple viewpoints and multiple ways of making sense of what happened in the classroom. It is perhaps this acknowledgement of the different perspectives around the same moment that participants were often struck by, and many conversations unfolded with different members of the group sharing diverse viewpoints on the same classroom episodes. In seeking understanding of the individual, contextual, nature of experience there needs to be space for co-existing points of views, and the roles of "speaker" and "listener" became central, "...when the listener perceives and understands the meaning (the language meaning) of speech, he simultaneously takes an active, responsive attitude toward it" (Bakhtin 1986, p. 68). Utterances can never be repeated, they are always recreated in new ways, and within the interactions around these utterances, the role of speaker and listener became very complex. The purpose of ongoing cogen within this course was to provide opportunities to reflect on classroom events, individually as well as collectively, with the explicit focus on improving practice moving forward. Thus, we often discussed how each lesson was "better," in that we learned from what we were doing and discussed alternatives and challenges, and used these discussions to focus on what to do in upcoming lessons. "Better" because the analysis and structure of each of the lessons was purposeful, and this purpose was decided within the cogen by the group. This was intrinsically linked to, and reinforcing of, better teaching of the science topics. Cogen mediated each participant's abilities to draw on each other's lived experiences, as they were a way for all participants to be open to learning from the others.

A RIGOROUS TEACHER EDUCATION

We embrace Kincheloe's use of the term "rigor" (2003) to highlight the importance of working towards a rigorous education that equates with the "best" education possible for the particular contextualized situation. We see this form of rigor as critical to pre-service teacher education in particular, as participants are supported in exploring their students' experiences and getting to know them. Further, we hold a vision for education writ large that unites trying one's best with working together. Best in this light involves the unity of individual and collective understandings and efforts. In this way, cogen created the opportunity for participants to explore the contradictions and ambiguities of teaching. Ira Shor and Freire (1987) have written about the importance of having a combination between being open and not rigid and

yet being rigorous, and we see that as a critical consideration in teacher education. Throughout our course we had conversations about rigorous work. Chris did not assess the participants' lessons in the classroom per se, yet they each worked with others to create and facilitate lessons that were as successful as possible.

Nicki: We had an understanding that what we were doing was beneficial and important, yet Chris didn't come in every day with a specific agenda. It was what happened in the second grade classroom that fed into what would happen in our cogen. Our syllabus was very open, and that was significant, because it meant that being "prepared" to come to class meant not necessarily reading a textbook, but rather, thinking about what happened and what we had decided to read together. There was a lot of fluidity, and that was good. That was what gave rise to our conversations and issues discussed in cogen. I said earlier that this was organic, in the sense that it grew from what we were doing in the classroom. It wasn't that we felt there wasn't work to be done, as it was really relevant and purposeful work that was being done.

Chris: It feels risky to not give people the more traditional "this is what we are going to do because I said so" at the beginning of the course. It is difficult to begin a course with an open syllabus, and to explain what it means for us as a collective.

Nicki: But it was important though, because things weren't set in stone and they were fluid. So that if I was working on something and it wasn't "right" yet, we could have a conversation within our cogen - that's really the way it was all co-constructed.

Chris: As participants collaboratively and intentionally conducted their own research of the content and possible approaches to teaching the topic, it was my hope that they were able to discover information on their own, retain the knowledge, and most importantly, that they have a level of confidence in their abilities to research science content and develop curricula to afford students' learning of science.

Nicki: I think about the things I learned in science quite often, especially now that I am teaching my own class, and I still talk to people from our course. Our conversations have continued to support me as a new teacher. I also think the course really prepared me for teaching science; not only did it prepare me to teach it, but I love science and it is one of my favorite subjects to plan and implement with my students. I have noticed because of my excitement my students are equally excited. They have science notebooks, because I think it is key to demonstrate their progress and their thinking, but also because it is a reflective piece for them. Just like we journalled together about what we did, and how things worked or didn't work, I like that my students have a resource to review what they have learned.

We argue that learning to assume responsibility for one's learning is an act of collective empowerment, and as such, we see working towards sharing responsibility for teaching and learning as opportunities to both learn about teaching and to share power. "The cogen mandates commitment to the collective, responsibility for one's own acts, and the power to act, by its very design." (Stith and Roth 2008, p. 37). To be truly dialogic implies a give and take, and a change in power relations. As we push back on the notion of "best" practices and "correct methods" we collectively generated local theory. A structure that is fluid and cogenerated provided the time and the space to collaboratively deconstruct classroom events and share experiences in order to build local theory *together*.

RAISING QUESTIONS AND TRULY COMMUNICATING

There are questions emerging for us, as we continue to move forward on this research and begin a focus on the inseparability of emotions from the experiences we have shared and debated as a group. These questions continue to ground our collaboration, as we ask questions of each other and of ourselves related to the role of emotions in learning and in teaching. In this chapter, we explored the implementation of cogen within the context of a science methods course for elementary pre-service teachers. As undergraduate pre-service teachers enrolled in these field-based methods courses collaboratively developed and cotaught a science unit to children, they critically examined events in the classroom, to engage in dialogues that examined making changes to improve teaching and learning. Freire presented dialogue to move a group towards critical consciousness (1973). He wrote that "dialogue is nourished by love, humility, hope, faith, and trust ... only dialogue truly communicates" (p. 45). Cogen as an approach to teaching and research facilitated the development of such critical consciousness.

Nicki: When you've seen learning this way, you can't see it any other way...

APPENDIX - TRANSCRIPT CONVENTIONS

- dough Underline indicates emphasis or stress in delivery
- cardBOARD Capital letters are used when an utterance is louder than the surrounding talk
- like- The hyphen mark indicates a sudden stop.
- wa:ter Each colon indicates approximately 0.1 second of lengthening of sounds that are longer than normal
- today? Punctuation marks are used as characteristics of speech rather than features of grammar
- ((to Stacey)) Double parentheses indicate our transcription comments
- [you have to] Square brackets indicate overlapping speech

EXPLORING THE COMPLEXITIES OF LEARNING TO TEACH

NOTES

- ¹ We have adopted Roth's (2005) use of the Sheffer stroke, |, to represent dialectical relationships.
- ² We suggest the following review chapters from *World of science education: Handbook of research in North America*, W.-M. Roth and K. Tobin [eds]. Rotterdam: Sense Publishers: Carambo, C. Evolution of an urban research program: The Philadelphia Project, pp. 473–490; Bayne, G.U. Cogenerative dialogues: The creation of interstitial culture in the New York metropolis, pp. 513–528; Martin, S.N. Learning to teach science, pp. 567–586.
- ³ With the exception of the authors, all names are pseudonyms.

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GILLIAN BAYNE

18. UTILIZING INSIDER PERSPECTIVES TO REFLECT UPON AND CHANGE URBAN SCIENCE EDUCATION

Abstract In this chapter I investigate how racial, cultural, class and gender equity issues change the ways that learning occurs in urban science classrooms. I explore how marginalized students of color utilize their *cultural capital* in order to survive and perform well in a small, high-performing high school science class. The roles that gender, ethnicity and language play in accessing and appropriating the power to act, and therefore change such a classroom, are explored. Through utilizing *cogenerative dialogues*, which serve as seedbeds and catalysts for generating new culture, I demonstrate that teacher and student researchers greatly impact the life of science classrooms. Appropriate actions, including those involving students' agency, ensue with noted changes in the roles of both teachers and students, affording participants opportunities to be more fully engaged in their work. Growth and expansion of science understandings and culture result, building new interactive interpersonal styles, and providing a foundation for ongoing cultural expansion.

The research I describe in this chapter is situated in a small urban New York City high school for high achieving youth, *Collaborative* (pseudonym), and details some experiences that two ninth grade biochemistry students and I had through the use of cogenerative dialogues (cogen). A goal of this work is to contribute to the understanding of the breakdown that often occurs between and amongst those parties involved in urban science education, by sharing insider perspectives of students. The experiences, knowledge and practices of urban students have been used in this work as a means to help inform and improve science teaching and learning. Theoretical lenses upon which this research is grounded primarily involve those that are sociocultural in nature (Sewell 1992), explore social life through the agency|structure relationship (Roth and Tobin 2006) and, through the work of Randall Collins (2004) and Jonathan Turner (2002), examine the sociology of emotions and emotional dynamics in encounters that involve face-to face interactions.

This research addresses how urban students who have been historically alienated from science, embrace opportunities to share and develop forms of new culture, which is then reproduced, enacted in the science class, laboratory or other fields, and is concurrently transformed from that which it once was. Students involved in this process have utilized their agency and understanding of theory to make transitions

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from participating marginally in their biochemistry class, to accessing structures that enable them to contribute to their own learning, and the learning of others, in substantive ways. I argue that it is because of engaging in cogen that a range of increased possibilities for the development of new roles for students becomes possible. What is substantiated in this work is that the new culture created during cogen can and does become integrated into participants' habitus (Bourdieu 1996), greatly affecting the *core self*, *sub* and *role* identities (Turner 2002). In this chapter, Theo, a student researcher of more than three years at *Collaborative*, affords us insights into the expansion of human agency, both at the conscious and the level at which he is unaware, attributing them to his consistent participation in cogenerative dialogues.

The protocol described and utilized in this study incorporates a variety of ethnographic data resources (videotapes and transcripts of cogen, high school classroom and science laboratory practices, interviews, and spontaneously occurring meetings; journal entries, field notes, student and teacher generated artifacts) with foundational conversational analysis. Evaluation of these data resources facilitate the exploration and understanding of the ways by which aligning culture and expanding student roles, both inside and outside of the science classroom occur.

INCORPORATING CRITICALITY INTO SCIENCE EDUCATION

Given the diversity in race, class, ethnicity, learning styles and the like, it is urgent, especially in today's urban classroom, to examine oppressive and hegemonic forces closely. A need to reconstruct educational morals exists, as does the need to use varied and appropriate theoretical lenses in order to capture and understand the intricacies of a student's life. In bell hooks' *Teaching to Transgress* (1994) educators are encouraged to remember the importance and sacredness of the classroom, its limitations and unlimited possibilities, both for the individual student as well as for society. hooks speaks to our moral obligation as educators to create a paradigm shift toward ways that will allow education to become what it was honestly meant to be – all inclusive, unbiased, and multicultural, irrespective of the student body "color." A true and just education must be one that allows for open-mindedness, and becoming more aware of the need to operate in a manner which transcends boundaries related to cultural, racial, economic and social differences in order to educate as the "practice of freedom."

Positive change in science education is progressing in part because of those involved in critical science education research. We are called upon, for example, to wrestle with concerns around social justice, globalization, immigration, and language and cultural diversity challenges. Additionally, attention is being focused toward creating learning environments that are responsive to cultural difference, while staunchly adhering to the criterion of credibility as detailed, for example, by Egon Guba and Yvonna Lincoln (1989). This criterion has been utilized throughout the entirety of my research, and encompasses six dimensions: (a) prolonged engagement, (b) persistent observation, (c) peer debriefing, (d) negative case analysis, (e) progressive

subjectivity, and (f) member checks. In urban science classrooms, we are challenged to become sensitive to the richness that diversity affords us in thinking about ways to implement cutting edge approaches to understanding varied ways of knowing and understanding (Ladson-Billings 2000). As a science educator who has had a wide range of teaching experiences with very diverse student populations I have embraced the opportunity to discover ways to change the dynamics of the science classroom in an effort to improve teaching and learning (Bayne 2009). Positive change, especially as it relates to change through the production of capital – the reproduction and transformation of cultural, social, and symbolic capital (Bourdieu 1986) – is at the heart of the research I present in this chapter.

EXAMINING SOCIAL REALITY IN THE URBAN SCIENCE EDUCATION CLASSROOM

Turner (2002) has described social reality as unfolding along three major levels— institutional systems and domains (macro-level reality), corporate and categorical units (meso-level reality) and face-to-face interactions (micro-level reality). Each of these realities operates dialectically with the other. In other words, within the three levels, macro|meso|micro, each presupposes the existence of the other, even though each, in and of itself, is different. Within each level, there are traces of influences of another. Research in science education is becoming increasingly attuned to ways by which social life of a classroom or laboratory setting is enmeshed within these levels of social life. For example, Wolff-Michael Roth, Kenneth Tobin and Stephen Ritchie (2008) investigated how time and temporality mediate the organizational structure, and the unfolding of meso and micro level realities in various aspects of the teaching and learning of science in an urban school. Prosody, the particulars of sound production, including pitch, speech rate, and speech intensity, is proving to be invaluable in exploring how, at the micro level, students and teachers can use structures and their agency to facilitate (or truncate) learning. Pitts (2010), for example, examines how students and teachers used a combination of prosody markers to appropriate resources and create structures that help decrease the breaches of encounters across social markers, such as age, ethnicity, gender, and roles, during a chemistry laboratory activity. Tobin, with the example provided through interactions between Mirabelle (student) and Victoria (teacher), in *Teaching to Learn* (Tobin and Roth 2006) shares an example of how research at the meso and micro levels can help to understand and predict the emotional content and power dynamics that transpire as social reality in the science classroom gets enacted. In order to understand and gain a greater appreciation for the challenges faced by urban inner city students today, especially those who are Black and Latino, it is crucial to consider new pedagogical and theoretical lenses through which these contemporary educational challenges can be interpreted and acted upon. It is equally important to remember the historical climates that have shaped the challenges that these racial and ethnic groups have faced in their pursuits of education and educational equity.

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SETTING THE STAGE FOR CHANGE

In the fall of 2004, Theo, an incoming ninth grade student of Dominican descent, excitedly approached my teaching bench on the first day of school at *Collaborative*. Looking to his left, and then to his right, in an effort to be discreet and maintain a sense of privacy, he said:

“Hi, Ms. Bayne, my name is Theo. I just wanted to ask you a quick question. Do you allow hats to be worn in your science class? I’m new to the school and wouldn’t want to do the wrong thing by wearing one, especially on the very first day.”

A sense of relief came over his face and seemingly his entire body when I assured him that as long as his hat posed no safety hazards in the class or science lab, the culture of *Collaborative* and hence, the culture of each of the classrooms within which he studied would welcome him with or without a hat of any type. Even though this is what I hoped would be Theo’s experience, I learned in subsequent conversations with him that being respected and welcomed by all were far from givens in his new learning environment. Being different in so many ways from the majority of the high school student body at *Collaborative* was certain to have its challenges, both with Theo and with those of whom he interacted, at conscious and subconscious levels. It is precisely because of his difference that I believed that Theo was an excellent choice of students to be involved in cogen. While there were several participants in cogen during the course of this research, Theo is the focus of this chapter.

DEVELOPING COLLABORATIVE HIGH SCHOOL

In 1988, three administrators who were eager to develop a school that would address specific concerns around the intellectual, emotional and social development of children created *Collaborative*. The school is grounded in a philosophy that upholds compassion, diversity, pluralism, academic rigor and collaboration. During the first four years of the school’s operation, it functioned solely as a middle school. Most students who attended the high school were students who also attended the middle school.

At the time of this study, New York City Department of Education (NYCDOE) had been organized around districts and regions. Preference for attending *Collaborative* was given to students who met a series of requirements. First, students were required to live in close proximity to the school and within the district. The neighborhood, Chelsea, New York City, is primarily residential, having a mixture of tenements, apartment complexes, city housing projects, townhouses and renovated rowhouses. Its retail businesses commonly reflect the ethnic and social diversity of its population. While the neighborhood is diverse, the student demographics are strikingly different from most New York City public schools. In addition to living in the neighborhood, students were required to go through a screening process that included taking an

entrance exam that had both a writing and math component. A collaborative project requirement had been recently added to the entrance prerequisite, which provided some insight into how students might work collaboratively in a classroom. Upon completion of their middle school experience, a large number of students (approximately 85%) elected to attend *Collaborative's* high school, thereby severely limiting the number of new students that would complete the student body. At the time of this research, Theo was one of the few students accepted into the high school that lived outside of the district, commuting to and from his home in upper Manhattan.

The weekly average attendance rate for *Collaborative* has consistently hovered around 96%. In the 2003–2004 academic year, out of a total of 431 students, 59% were female. Student ethnicity distribution shows the student population during that time as being comprised of 56% White; 26% Asian/Pacific Islanders; 10% Hispanic; 7% Black; and 1% not reporting their race. Ninety four percent were general education students, 6% special education students, and 2% identified as English language learners (New York City Department of Education 2006). This information becomes very important when we consider that most New York City Public Schools serve large populations of Black and Latino students whose parents, while actively involved in their children's education and raising money for their children's schools, have not been able to do so to the tune of \$100,000 per year. At the time of this research, *Collaborative's* Parent Association had an annual goal to raise approximately \$100,000 to help supplement the principal's budget. It had met and exceeded this goal.

RESEARCH SQUAD BEGINNINGS WITH COGEN

I was invited by Dr. Kenneth Tobin to participate in a New York City urban education research project, which involved utilizing cogen in public high school science classes during the fall of 2004. I was eager to be involved, as I had already had a general understanding and appreciation of cogen due to some reading and classroom discussion around them in a doctoral research methods class. I initially envisioned being able to use cogen in a multitude of ways, including being able to reach out to ethnic minorities who, for varying reasons, were not performing as well academically as some of their classmates. From this research project, a cogen research squad emerged, where a group of 5–6 colleagues participated in the many aspects of conducting, interpreting and evaluating research procedures involving cogen throughout New York City. I learned as much as I could about setting up cogen within our research squad and by reading salient works. Within a short period of time, I selected one of my ninth grade biochemistry classes that was balanced best along the lines of gender, ethnicity and academic strengths.

During the research squad meetings, each research participant was able to share videotaped vignettes, written and oral experiences and receive valuable feedback from colleagues related to ongoing work in our classrooms. We endeavored to make sense of what was taking place in our classrooms and laboratory activities from

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varying experiential and theoretical perspectives, much in the same way that bench scientists come together to organize their thoughts and viewpoints related to the results garnered from, for example, a novel experimental protocol. Peer debriefing, sense making and member checking (Guba and Lincoln 1989) were integral to the culture of the research squad.

SCHOOLS HOUSE AND PRODUCE CULTURE

From a sociocultural perspective, schools are fields –places and spaces that are physically and temporally defined, within which people enact culture. The nature of fields is that they have no boundaries. The culture enacted in one field can freely be enacted in another. The notion that the culture, which takes place in schools is mirrored by that which takes place in arenas directly or indirectly related to schools at both the meso and macro levels (Turner 2002), is not unusual; rather, it is likely to be the norm. It is not surprising to find, therefore, that culture - associated practices and schemas - within a field shares many commonalities, including, for example, views and perceptions related to factors such as race, class, gender and age, with those of society at large. Often times, urban schools designated as gifted, specialized or geared toward high performing students are thought of in a different light than most. These schools are not devoid of many of the challenges that are dealt with in others, including students interest, motivation, standardized test performances, classroom behavior and truancy. Injustices prevail in high performing schools that, as in other types of schools, implicate race, ethnicity, socioeconomic standing, language differences and ability. One goal of using cogen is to be able to address the shaping and creation of new culture that can ultimately lead to successful interactions across sociocultural boundaries. In this work, it is noted that studying unsuccessful, disruptive interactions and other contradictions are of equal valuable as studying the successes.

THE IMPLEMENTATION OF COGEN AT COLLABORATIVE

The varied uses of cogen emerged from longitudinal studies undertaken in urban science classrooms in Philadelphia. Historically, cogen have taken on many forms. In this particular study, two students, Theo and Jazz, were invited to participate in cogens during my first year as a teacher researcher at *Collaborative*. These students differed in many ways, including those related to race, ethnicity, native language and gender. Also, their levels of participation and the success they demonstrated within the science classroom and during laboratory experiences varied.

Theo was invited to participate in cogen for a number of reasons, including the fact that he was new to the school and was different from many of his peers racially, ethnically, and socioeconomically. While, he was born in New York City, Theo's parents emigrated from the Dominican Republic to New York City in their teens. He is the youngest of three children, and has described his family as being very close and hard working.

Theo's exposures to science were radically different from those of students who had a history at *Collaborative*— they had attended the middle school and he did not. On several occasions, Theo lamented about his not being 'good' at science and, not liking it very much. Over time, however, he demonstrated a keen desire to understand the given science content and to master it. Theo had personality — he was charismatic and took pride in maintaining his inner city dress and style (which was viewed as somewhat contentious at the time in the school), not wavering in the face of peer pressure to change the way he presented himself aesthetically.

During the course of this research, Theo's roles in and out of the school expanded in many ways. For example, he became a student advocate, coteacher, peer-teacher, and a school wide curriculum developer. Over the years, he organized a Hispanic Culture Club, participated in a lobbying visit to Albany, NY to address politicians on issues related to second language learners and has provided valuable insight into the hiring of science faculty. Within this chapter, salient examples of Theo's emergent ontology of *being with the other* and *for the other* (Tobin and Roth 2006) become evident.

Jazz, an African-American student, transferred into *Collaborative* at the start of eighth grade from a poorly performing middle school in her uptown neighborhood through the *No Child Left Behind Act* (NCLB). The Act, signed into law on Jan. 8, 2002, is the latest revision of the Elementary and Secondary Education Act (ESEA), the federal government's flagship aid program for disadvantaged students. At the core of the No Child Left Behind Act is a number of measures designed to hold states and schools accountable for the academic achievement of all students; ensure that the teaching and paraprofessional staff is highly qualified; and provide parents with access to information and choice. In Jazz's case, her middle school fell into the category of being a low performing school. Savvy and well informed parents know that under the NCLB Act their children can choose to attend a school that is in good standing. While this good news for those who can and do transfer, so many children are still left behind in schools that are not serving them properly, because the high achieving schools might be overcrowded, or hard to get to by public transportation.

Jazz lived with both of her parents. It was her mother who heard about *Collaborative* and encouraged her to think about transferring into the school. Jazz was very interested in attending the school, but realized early into her eighth grade experience that both her elementary and previous middle school science experiences placed her at an academic disadvantage. Nevertheless, Jazz approached her work in a mature and endearing manner. Jazz's demeanor had always been very pleasant, yet reserved. She mentioned in cogen that she felt a bit stigmatized at *Collaborative* because of being affiliated with NCLB. Jazz had been met with challenges, both by her classmates and some teachers related to disparities around race and her academic exposures and background. She struggled academically in many of her classes, including science. Jazz, for example, would oftentimes confide in me that

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she had not performed as well as she would have liked to on a science or math test because of her lack of exposure to key concepts and practices in her previous formal and informal experiences. Additionally, it was clear to many (teachers, students, staff and parents) of Jazz's NCLB status, as she transferred from her neighborhood school through a variance to *Collaborative* during the middle of her eighth grade experience. She often spoke of feeling inscribed negatively because of this.

Traditionally, in addition to student researchers participating in cogen, one or more teachers working with the class, one or more school administrators, and one to two teacher educators and/or researchers have participated. The cogen that took place at *Collaborative* during this study involved Theo and Jazz, on some occasions a student teacher, and myself, a general education science teacher. The focus of our dialogues involved a shared experience of participating together in a field, typically, a science classroom or laboratory. There were often opportunities for students to talk about events and/or conversations that took place in commonly traversed school fields, including math classes, visits to guidance counselors and meetings with the directors of the school. Usually the discussion involved careful evaluation, interpretation and commentaries on events considered to be worthy of discussion. Participants shared what was working well for them, like, for example, being given opportunities to be directly involved in modifying texts for more fluent comprehension and practice in our science class. Other patterns of coherence included a strengthening sense of solidarity around what made for good science teaching and learning through increased mutual focus, positive body orientations and gestures, and increase occurrences of collective effervescence. Shared experiences within the classroom, that needed to be resolved, practices and roles of participants, and suggested changes associated with improving the quality of teaching and learning within these fields were also investigated.

TOWARD A NEW PARADIGM: CHANGE IN INDIVIDUAL AND EDUCATIONAL IDENTITIES

While both Theo and Jazz were very active in cogen during their ninth grade, the focus of this chapter is on Theo. The reasons for this are many. Throughout the three years that I used cogen at *Collaborative*, I maintained a friendly and collegial relationship with Theo. During very short periods of time, and with regularity, I noticed that Theo's growth as a student had changed markedly. His roles in and out of school expanded, a result that he credits to the value and workings of cogen. Periodically and informally, I would ask Theo to reflect upon various aspects of his school experiences, his family, dreams and goals. I was especially interested in how his identity as a student may or may not have been changing. Below, Theo reflects upon his middle school identity at Wagnall Middle School. He admits that his focus as he transitioned from middle school to high school was changing, especially along academic lines, and the regard that he had for his teachers.

“The person I was at Wagnall was completely different than the person I am now. At Wagnall I didn’t really care about my grades, I preferred to focus on self-image; that was my area of expertise. As long as everyone liked me, mainly the girls, I was happy. I didn’t really care about my teachers and how they viewed me because my mentality was that, I knew I was smart but just felt that I didn’t need to prove to anyone that I was capable of getting good grades, and besides, being popular beat having to study and work hard any day.”

Based on this description and daily observations early in the year that I made of Theo, I could sense that he would be challenging some of his own identity constructions. I was eager to start the dialogues and to learn more about both him and Jazz.

INSIGHTS INTO STUDENT IDENTITIES

Middle school students, who do not return to *Collaborative* for their high school experience, usually elect to attend specialty public schools in New York City, such as The Bronx High School of Science, Stuyvesant High School, Brooklyn Technical High School or a variety of private schools. *Collaborative’s* middle and high schools science programs are notorious for being academically rigorous. Middle school students’ exposures to science are in-depth, and the curriculum challenges them to probe into the content in ways that many other urban middle school students do not.

In an early cogen, Theo described his science exposures as extremely limited, and said that scientific investigations in his old school were carried out in a disjointed and superficial manner. In middle school, being disconnected to the content was a common feeling, rather than the exception, according to Theo. Not only were Theo’s science exposures different from those of returning *Collaborative* students moving into the high school, on several occasions he mentioned that the relationships he had with his peers during his first year at the school were, disappointingly, not as meaningful as they had been at Wagnall. As such, he mentioned that he felt very much like an outsider for most of this time. While it was disappointing to hear this, it was not very surprising to me.

In another cogen, Theo, Jazz and I were talking about math and science identities and what it was like to be a student of color in the school. Theo mentioned that while he did not feel confident about his science skills, he enjoyed math and was very good at it. He shared the following about being a gifted math student and about being inscribed by his classmates and guidance counselor:

Theo: At first everyone was thinking that my good grades were no big deal, like it was luck or something. And then everybody kinda started figuring out that math was actually my strong point and that it was something that I enjoyed doing. So then, I found out that people started relying on me in math, kind of asking me like, “Yo, what’s the math homework? Can you help me?”...So the fact that I wasn’t getting that at the beginning of the year, made me feel like

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they obviously assumed that I wasn't going to be smart. And then later I was going into Mr. Star's (the student counselor's) office and he complemented me and said, "Oh, I saw your grades, you got really good grades..." and then at the end he added, "but, you know, you kind of threw me off with that backward hat..." Not that that made me feel bad or anything... I just kinda laughed at it – but it made me feel that this appearance has a great deal to do with how people feel about what I am capable of...

Gillian: You kind of threw me off with the backward hat...

Theo: Yeah.

Gillian: What do you think about that comment Jazz?

Jazz: That's wack, but it doesn't surprise me because of who we are physically compared to most kids in this school. When you are Black or Hispanic, a lot of times people don't think that you're all that smart. The same kind of thing happens to me all the time. That's why I mainly stay to myself.

I could identify with many of the concerns that Theo expressed about how he had been inscribed by others, most probably because of his race, gender and ethnicity. There is a lot of contention around race and ethnicity. As such, popular notions that urban students are lacking in both interest and competence, particularly in math and science because of poverty, cultural deprivation and social reproduction, have proven to be neither transformative in either student or teacher attitudes nor in practices (Seiler 2002). Nancy Lopez (2002) in her research on second-generation Dominican males found that both formal and informal institutional practices within schools greatly affect their outlook on education. The above example speaks directly to the potential of this happening. While it is likely that the guidance counselor did not give much thought to what he said, it was laden with deficit views of urban youth, especially Latino males, and it obviously bothered Theo. There was great value in having an opportunity to talk with both Theo and Jazz about this encounter and how hegemony and deficit views of urban youth can and have influenced their interest and participation in classes like math and science.

AGENCY|STRUCTURE MEDIATES THE ABILITY TO CREATE AND ENACT CULTURE

I feel that I have two niches in school, one is to enlighten the environment and make school fun and the other is to make school diverse and allow people to see that Hispanics can be intelligent and well rounded as well.

(Theo, Grade 10, reflection on how he envisions his role in the *Collaborative* community)

This research involving Theo was founded upon the primacy of human agency – the power to act. When agency is exerted, the capacity to create and participate in our lived work, i.e., teaching and learning (Varela 1999) as opposed to being determined by it becomes possible. The lived experiences, knowledge and practices of urban students like Theo are valuable in informing and improving science teaching. The writings of Paulo Freire (1970) are aligned with this notion, and emphasize the dialectical relationships between society’s political, social, and economic conditions and personal freedom. Freire’s foundation for change begins with valuing an individual’s lived, private experiences. Change in an individual and one’s environment become possible through the awareness of the dialectic, not just by sheer luck. Joe Kincheloe (2005) has argued that this change (in the contemporary urban classroom) must begin with educators taking an active role in creating critical consciousness and by enacting critical pedagogy. He details that this change is multifaceted and involves a careful, thorough, reflective evaluation of a teacher’s own personal, educational and professional histories within a bricolage context (encompassing all aspects of a teacher’s own experiences as a student). With an understanding and insight into our own lived experiences, we can begin to share with our students (a) a means by which they too can examine who they are and (b) work to transcend social and educational injustices through the understandings and exertion of their own agency and abilities to access and appropriate various forms of capital. In so doing, students are able to free themselves from stigmas, and are able move from a place of commonly internalized untruths to a place where freedom to choose, validate and incorporate one’s own reality can be made.

RESTRUCTURING POWER DYNAMICS VIGNETTE

Opportunities arose to incorporate much of the theoretical framework that I began to learn about through my participation in the research squad into cogen at the high school. Soon we all began to talk about experiences related to, for example, agency, culture, transformation, emotional energy and communalism. What was very interesting to note was the growing ease at which both Jazz and Theo spoke of their concerns, goals, struggles and identities. I noticed more participation in the science class from both students. Theo, for example, became increasingly agentic in a variety of ways. He would take risks by contributing to lessons, asking clarifying questions and volunteering to demonstrate specific aspects of a lab that may have been especially challenging. This was meant for his benefit, as well as for the benefit of his classmates. Jazz’s development through her participation in cogen included her increased fluidity in expressing herself, and in many cases, there was an increased attention to detail, especially in projects that required the representation of concepts and ideas in authentic model making. Reviewing videotape recordings of classes, laboratory activities and conversations in cogen with participants and with my research squad was

important in order to understand the varied interpretations of what was occurring in the learning environment.

In the vignette that follows, Theo, Jazz, and I had a conversation in the cogen about lab quizzes and lab reports, specifically *lab rubric items*. *Lab rubric items* were written requirements for ninth and tenth grade students at *Collaborative* that collectively made up the content of a well-organized lab report. Students were required to meet designated standards to demonstrate their competencies in lab work. The lab rubric items detailed the requirements for meeting those standards. During the course of their ninth grade biochemistry experience, students typically completed eighteen to twenty-one labs. It became apparent that after the first few labs, students were not completing the required reading and consequently were not amply prepared to carry out many of the laboratory experiments. Typically, students were required to complete a set of pre-lab activities. A common pre-lab activity involved reading an introductory section that was formatted into a lab packet. In the first few labs, the introduction was detailed in 2–3 pages. As the course progressed, the introduction became increasingly detailed and could easily be 6–8 pages. I decided that in order to help prepare students for the lab, we would review all of the key ideas and concepts in class and require students to thoroughly read through the entire introduction for homework. To my disappointment, I discovered that over time, students were coming to class and to lab ill prepared. As such, in an effort to hold students more accountable for their homework assignment (the reading of the introduction), I decided to give them a quiz *after* reviewing the laboratory material but *prior* to carrying out the lab. Usually one of the questions on a lab quiz would require students to identify the lab's purpose. This became problematic for students in the class and was broached in the following cogen transcript. Additionally, an attempt to better understand the challenges that students faced in preparing for labs became apparent. By talking with Theo and Jazz, I was made privy to students' rationales for their points of views and feelings about their preparedness for lab quizzes.

What can be discerned from viewing and analyzing the vignette is that within the cogen field, although differing points of views are presented, there is evidence of participation by each of the stakeholders and a mutual focus that, in this case, was organized around quizzes and lab rubric items. Ethnographically, I describe participants as leaning in toward each other, making consistent eye contact and as speaking in a respectful tone, with fairly consistent and equal turns at talk. These are all important indications of the presence of mutual respect and rapport. The three episodes are especially interesting and helped me to understand the role that gestures, eye gazes and head nods play in building solidarity and mutual respect in a science classroom. I use the transcription conventions as described by (Tobin and Llana 2014). Despite Theo's articulated concern about his previous academic exposures in science, he became increasingly agentic within the cogen field. He was especially interested in issues involving understanding the content, and in student involvement in the lessons and student expectations.

Episode 1

- 01 Gillian: So, what is it that you'd like to talk about today?
- 02 Theo: =Let's focus around quizzes and lab reports.
- 03 Gillian: O.K., so, can we talk a little bit about performances on quizzes, specifically about identifying the purposes of labs and the procedure? ((Gillian gets up to adjust the video camera)) Anybody want to talk about that?
- 04 Theo: Umm:: (6.2) The lab rubric and quiz
- 05 Gillian: =What?
- 06 Theo: (0.8) Umm...I don't know how to put this into words, but we never really had a quiz on the purpose of the lab before. We usually write down the purpose of the lab in our lab notebooks during the lab itself.
- 07 Gillian: =Right.
- 08 Theo: =So::, I felt we were kind of put on the spot.
- 09 Gillian: [You felt that you were put on the spot. O.K. So how do you think that may affect your attitude toward the quiz? How do you think being put on the spot affects you on a ↑pop quiz, and as it relates to material that you ↑should have been familiar wi::th, right? And I am, I was a little disappointed with the grades that I saw but, not necessarily from you guys. (0.6) Some people for example gave the purpose and the protocol for a completely different lab. So::, do you remember the first question on the quiz? It was what is the purpose ((Theo nods his head, yes)) of the lab and the second question asked for you to describe the procedure ((Theo again nods head, yes)).

In episode 1, turn 4, after I ask for suggestions about what our discussion focus should entail. Theo takes initiative in focusing the topic of discussion around quizzes and lab rubric items. In turns 6 and 8, Theo moves the conversation forward by suggesting that there are equity issues related to the quiz that need to be addressed (turn 6). He expresses his concern about the class being, 'put on the spot' (turn 8) because the taking of a lab quiz in this manner had not taken place before. I interpret his concern to be one that is beginning to illuminate Theo's evolving sense of criticality. I am challenged to truly consider his and others' feelings of not being

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as prepared for a quiz, as they would have liked to be prepared. Additionally, I am challenged to think more deeply about my own practice – in this case the temporality of the quiz. Having an opportunity to hear from students about how they experienced this quiz reinforces the notion that no matter how organized or thought out a lesson may be, there are consequences for actions. Sometimes they do not materialize in the ways that they were intended. Through having this experience I was made aware of the need to be more ethical with my quizzes. Opportunities for polysemia and polyphonia helped me to better understand students' experiences and to more appropriately adjust plans as a means to serve students better.

At the beginning of the school year I stated clearly to my class that there would be pop quizzes throughout the year. Even though I reserved this "right" it was now being presented as a salient issue to be discussed. In turn 9, I acknowledge Theo's feelings of being "put on the spot." I continue by asking several questions, one of which involved an attempt to find out how having a pop quiz might have affected students' attitudes toward the quiz (and perhaps their performance). I was concerned about the consequences of my actions and that they may have influenced students' enthusiasm for learning the content and their future attitudes toward preparing for future tests and quizzes. I was able to express within the cogen my disappointed with some of the quiz grades, something that I did not ordinarily share with students. I believe that in taking risks, such as this one, we can begin to bridge some of the barriers that exist between students and teachers. Later in turn 9, I ask if Theo and Jazz remember the first and second questions on the quiz. All participants continue to lean forward, showing interest in the conversation. Theo nods his head affirmatively and Jazz maintains eye contact with me as I ask the questions. All of these gestures acknowledge continued focus on the conversation.

In episode 2, I interpret Theo's tone and the content of what is being said as creating an opportunity for him to present his rationale for proposing that questions related to the purpose of the lab should be asked of students after the completion of a lab.

Episode 2

- 10 Theo: [↓Hold up, We took this test, though, ↑before or after ((Theo shakes his head, no)) the lab? Before, ↑right? ((Theo looks for response from Gillian))
- 11 Gillian: (0.6) Before ((Theo glances over to Jazz, then to Gillian)).
- 12 Theo: (3.19) Was that the whole point of this ((Theo is nodding, yes)) to take it before? Or was it oh, I think it's time that I should give them a ((Theo shakes his head as he speaks as in saying no, and then follows this gesture up with a smile))

13 Gillian: [Well, the reason why I gave ((Theo looks directly down at the white lunch paper that held his sandwich)) it before was because I wanted to...

On several occasions, it appears as though Theo is monitoring our comfort level as we begin to discuss the timing of the quiz. Theo does so, for example, by first, quickly glancing at me in turn 10. In turn 11, as I am speaking, Theo glances over to Jazz, then again back to me. I interpret his activity as a way to demonstrate attentiveness and concern for what is being said and perhaps, while anticipating what might be said next. During turn 12, Theo asks me to clarify what was the “whole point” of addressing the lab question in the manner that it was addressed. At first, he is nodding his head, as in saying ‘yes’ – indicating that he has a good idea of why the question was asked before the lab. Then, he quickly asks another question, as if trying to make sure that we weren’t giving a quiz for the sake of ‘giving a quiz’, i.e., “Or was it oh, I think it’s time that I should give them a [quiz].” He clarifies that he did not think that this was my rationale for the quiz by using expressive gestures and by ending his turn at talk with a smile. I interpret his smile to be a way that he introduces positive emotional energy to offset any potentially negative emotional energy inherent in a confrontation. I believe that in part we are able to continue the conversation and create a safe place within which we could talk about our concerns because Theo did not mean to overtly, or in a confrontational manner, show his disagreement with the quiz protocol that I enacted.

Episode 3

14 Theo: [Auh nuh ((Theo concurrently folds his lunch paper in half))

15 Gillian: [Sorry, go ahead ((Gillian is looking at Theo directly, now))

16 Theo: Oh (0.6) Oh, no, I know. I know. The reason, well, I know why you could give it before but, I’m just saying, was that like pur::posely that you gave it to us before ↓lab, or ↓not? Awright ((Theo folds the lunch paper over again, this time gingerly))

17 Gillian: =Well, the reason why (0.4) Why do you think I would give you a quiz asking what the purpose ((Theo folds paper again))of the lab is before you carried it out?

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18 Theo: =Well, because maybe ((Theo continues to fold over paper two more times as he is speaking. The focus of what he is saying now, is changing a bit)) So that, well, the only thing that you have before ((Theo folds paper)) you to do the lab is your lab sheet so, you ((Theo smooths fold out on sandwich paper)) don't really have the experience yet of doing the lab and, I guess you'd want to, you want to make sure that we know what we are going to do prior to doing it.

At the end of episode 2 and during the entirety of episode 3, I interpret Theo's use of his sandwich paper as a resource to reinforce the temporality of his turn at talk, especially as it relates to what he says, will say and has said. For example, in turn 14, Theo interrupts my turn at talk (13) by breaching the turn saying, "Auh nuh." At the same time of his utterance, Theo folds his sandwich paper in half. This motion gets synchronized with his length of talk, starting at the commencement of the utterance and is completed at the end of turn 14. I propose that this motion brackets his turn at talk while at the same time reinforces his stance regarding the timing of the quiz. I view this coordination of motion and utterance as one of which he is unaware. In turn 16, Theo folds his paper again once, this time very gingerly. Although he is not speaking in turn 17, another fold is placed in his paper when the word *purposely* is uttered. Interestingly, in turn 16, Theo emphasizes the word *purposely* by lengthening the phoneme. In turn 19, he continues to fold over the paper two more times as he is speaking. This time the folding of his paper supports the shift in tone of what is being said.

It is because of the fluid nature of fields that the enactment of rituals (patterned actions over time) in other parts of Theo's lifeworld was enacted in cogen. His ability, for example to create and then to mend breaches, his use of semantics and utterances, and the way he makes eye contact, all play a role in shaping his identity as an agentic student. In the vignettes it becomes evident that Theo uses his agency to equalize power dynamics within the group. He does so by creating frequent breaches in the conversation and becoming involved in their repair. My interpretation of his interactions is that through eye gazing, and enacting repairs frequently, by using his voice in a non-confrontational manner and by using physical resources (the folding of his sandwich paper), Theo is creating opportunities to structure the field by framing and reframing the ways that he communicates.

Temporality becomes an essential factor in this vignette. In Theo's appropriation of capital, motion becomes an empirical representation of the length of talk. This representation is substantiated through the embodiment of his schema and provides a physical means by which it (disagreement with the timing of questioning students about the purpose of a lab) can be supported. The empirical representation and

significance that motion has in this example can be likened to the motioning in baseball of an umpire when a runner has safely reached a base. The umpire gestures that the runner is safe by crossing his hands, one over the other, and then quickly and forcefully, extending them opened. This all happens as the umpire bellows, “safe.” In turn 10, Theo provides another example of how he uses his agency (“↓ Hold up”) to manipulate resources, namely time, space and sound pitch. It is likely that he has not consciously chosen this utterance, but that it was a part of the repertoire of the resources that served him well in garnering control of the conversation and increasing his social capital in other fields.

EDUCATING STUDENTS AND TEACHERS

Students can become alienated from science for a variety of reasons. The urban context, including complexities involving ethnicity, race, socioeconomic status, language differences, and immigration create challenges around diversity and equity in schools. These sources of complexity are salient to the work presented in this chapter. A focus around Theo, a new student (second generation American male of Dominican descent) to *Collaborative* and his involvement in cogens were presented. Data, along with thick descriptions of how examples of how cogen have been used to engage students at risk of being alienated from science were discussed, as were Theo’s early constructions of his identity as a math and science student. Theo’s ontologies – constructions of what was taking place in the science classroom and how his interpretations were changing, were also becoming evident. By being involved in cogen, Theo’s science identity had begun to change into one that included leadership in the discipline. While Theo is the focus of this chapter, Jazz also played a very important role in the research and has benefited from being involved in it as well. Jazz demonstrated an increased sense of self, voice and agency. The quality of her written work and the frequency and insightful contributions to class discussions were strengthened because of her involvement in cogen. We created a culture that produced understandings, which allowed for adaptations in the ways that we planned and enacted teaching and learning. Engaging in understanding contradictions and polysemic perspectives (which value and take seriously the voices of urban students) create opportunities to produce new practices and schema in a variety of learning environments.

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19. LEARNING ABOUT AND FROM COGENERATIVE DIALOGUES: THE INITIAL STAGES

Abstract I document how cogenerative dialogue became an effective pedagogical tool to intercept the challenges students, the lab instructor and I encountered when a computer-assisted mathematics class was introduced within the General Educational Development program. The interpretive frameworks of cultural sociology, sociology of emotions, phenomenology, personal narratives and the transcript of a cogenerative dialogue session were used to examine the challenges and beneficence of computer-assisted learning. The use of cogenerative dialogue provides important insights regarding how educators in Adult Basic Education programs can improve the teaching and learning of mathematics in a technology-enhanced classroom when students are afforded opportunities to critique, co/plan and implement a new curriculum that aligns with how they learn mathematics as adults.

Over the years there has been an increasing demand for Adult Basic Education (ABE) programs in the United States to incorporate technology within their classrooms to improve the quality of teaching and learning. Technology, such as computers, serves as additional instructional tools to help students increase their knowledge and skills in academic subjects (Souter 2002), while obtaining the necessary computer skills required for employment in today's workforce (Lowther, Inan, Daniel, and Ross 2008). In ABE classrooms computers are used to deliver and improve instruction in the subject areas of mathematics, social studies, science, reading, writing, and workforce readiness similar to K-12 schools. Research reveals that computers have the potential to improve student proficiency in academic subjects such as mathematics, a subject in which students have exhibited poor academic performance (Ozel, Yetkiner, and Capraro 2008).

In the *Principles and Standards for School Mathematics* (2000), the National Council of Teachers of Mathematics (NCTM) suggests that computers and calculators allow students to learn more mathematics. These instructional tools mediate how students are taught, learn, and enact mathematics in the classroom. Research indicates that technology enriches students' mathematical experiences providing students with ownership over their learning as they develop necessary higher-order thinking skills and enhance prior mathematics skills while learning at their own pace. Yet, in spite of these positive effects of the usage of technology in the improvement of academic performance in K-12 educational settings these results have not been replicated within ABE programs. Many challenges exist in the integration and implementation of technology such as computer-assisted instruction within ABE programs.

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In this chapter I focus on the challenges faced by my General Educational Development (GED) mathematics class when a computer-assisted class was incorporated in the GED program to improve the learning of mathematics. The voices of my entire GED mathematics class, lab instructor, cogenative dialogue (cogen) participants, and me are featured within this chapter in which we identify the challenges encountered with computer-assisted learning. In addition, we identified pertinent strategies generated through the method of cogen to improve and enhance the learning of mathematics for all students. The difficulties my students, the lab instructor, and I encountered with computer-assisted learning afforded opportunities to examine how technology can be effectively used in ABE programs to support the teaching and learning of mathematics. In this chapter I outline a framework of how ABE programs can integrate computer-assisted learning to improve curriculum, instruction, and students' mathematics skills.

COMPUTER-ASSISTED INSTRUCTIONAL PROGRAMS AND THEIR PLACE IN ABE PROGRAMS

Teachers, program directors, researchers, and policymakers in ABE programs have favored the idea of utilizing technology to improve the quality of teaching and learning since the early 1970s (Rachal 1993). As such, many ABE programs have adopted technology to deliver instruction in order to enhance students' learning. ABE programs have embraced multiple forms of learning technologies such as, smart boards, projectors, calculators, computer-assisted instruction, and classroom response systems-clickers to support various educational activities that influence students' learning and understanding of academic subjects. For instance, at the Downtown Center, all of the classrooms have been upgraded to "smart classrooms" in which teachers have access to computers linked to projectors that display information to students. In addition, the GED program utilizes computer-assisted instruction in the teaching and learning of social studies, science, mathematics, writing, and reading the subject areas tested on the GED examination. Computer-assisted instruction allows students to learn concepts and procedures from computer software at their own pace.

In mathematics, these programs teach the necessary principles, computation, and problem solving skills in a tutorial format to improve students' fluency in mathematics. Students are able to access these instructional programs anytime of the day, as these classrooms are open 24 hours, seven days a week. This is beneficial to teachers and most importantly students because it increases the amount of instructional hours students receive in any given class period. Students enrolled in ABE programs in the State of New York receive a minimum of six hours to a maximum of 20 hours a week of academic instruction. Thus, computer-assisted instruction provides additional hours of academic instruction whereby students can set their own schedules to review and practice their mathematics skills.

In computer-assisted instruction students have a personalized approach to learning that is, private, visual, self-paced, provides immediate feedback, and can be

customized to meet students' immediate learning needs (Osei 2001). The interactive tutorials, exercises, and games allow students to construct knowledge and discover mathematical interrelationships linked by prior knowledge. Essentially, students learn by doing as they direct and control the events within the simulation. As a result, students view mathematical concepts less abstractly and more in a concrete manner providing a framework for thinking, reflecting, reasoning, and problem solving. For teachers, computer-assisted instruction can be modified to fit the academic needs of a specific student or class. Students enrolled in ABE programs bring diverse academic abilities and educational experiences to the classrooms in which technology provides differentiated instruction for struggling learners or students who may be more advanced (Barrow, Markman, and Rouse 2008).

Researchers who examined computer-assisted learning reported that students remember information appropriated in this manner because of the visual, auditory, and kinesthetic components. Visual learners read words and view graphics in an interactive mode presented in an orderly fashion, auditory learners listen to a clear voice that articulates key points, and kinesthetic learners use the keyboard and the mouse to drag, drop, match, click on target, type or choose appropriate answers (Yonder and Elias 1998). Students use a variety of skills to enhance their learning of mathematics, which cannot be accomplished from a standard textbook. Thus, computer-assisted learning is hands on learning at its best in which students appropriate information in an interactive format rather than being expected to learn from narrative, that is, passively recording, memorizing, and regurgitating random rules and procedures.

DIFFICULTIES WITH TECHNOLOGY

As a mathematics educator at the Downtown Center I was unprepared for the difficulties students encountered with computer-assisted instruction. I assumed students' could use computer software to improve their mathematics process skills, had enthusiasm for learning mathematics in a non-traditional classroom, and could produce the wherewithal to combine knowledge from a teacher-led and computer-assisted class to achieve fluency in mathematics. These assumptions led to conflicts and contradictions for my students and me.

The mature adults (25+ years) experienced the most difficulties using computer-assisted instruction. Many of these students had been out of school for an extended period of time and were apprehensive about using computers to inform their understandings of mathematics. Joseph, a student in the class, stated that the last time he was in a classroom was 1984, and computers were not used as instructional or learning tools. Thus, the mature adults did not view computer-assisted learning as a tool to enhance their learning of mathematics, as it did not reflect their notion of teaching, learning, or their image of a traditional mathematics classroom. It was evident that these students were accustomed to traditional methods associated with teaching and learning in which the instructor lectures, provides course materials, students listen, take notes, and complete classroom and homework assignments. Jasmine, a mature-aged

student within the class stated that she was accustomed “to doing stuff from the book ... I [Jasmine] am from the old school.” The mature-aged adults were socialized to value a teacher-centered approach to teaching and learning, probably based on their prior educational experiences. To these students computer-assisted learning was a foreign instructional tool, which explains the uncertainty students felt utilizing this tool to improve their fluency in mathematics.

Not surprisingly, the younger students (18 -24 years) enrolled in the GED class encountered fewer difficulties or challenges using computers to improve their fluency in mathematics. Several surveys indicated that more than one half of young adults spend 9 hours a week on Internet activities (Owston 2009). These students represented a generation who used computers and other digital tools such as graphing calculators in their prior school experiences to a greater extent than mature adult learners. Jerry, a young adult, indicated he was satisfied with the current structure of the class. He felt at ease with computer-assisted instruction and favored this form of teaching and learning due to his age and mathematics ability. From his coursework it was evident that he was more advanced and knowledgeable in mathematics than the older adults. Yet, he did not consider himself a strong mathematics student, because he failed to achieve 100% on his test and quizzes due to “certain things and silly mistakes.”

The mature adults were discontented with the learning environment, in addition to the behavior and acts of disrespect displayed by some of the younger students. However, the negative emotions experienced by the mature adult learners were more projected towards the computers, Sara (lab instructor), and me (primary instructor), originating from students’ unfulfilled expectations of teaching, learning, and understanding mathematics in a non-traditional manner. Jonathan Turner (2002) emphasized that expectations are the essential element within any encounter. When students enter classrooms they hold within their schemas (beliefs, ideas, and values) expectations regarding teaching and learning acquired from their prior experience within a classroom setting. Hence, in the computer-assisted class the mature adults did not understand their respective roles, those of the teacher, or the computers within this new classroom setting. As a result, students’ expectations about the classroom structures and those associated with the instructors’ roles were not met, leading to the display of first order negative emotions such as anger, fear, and sadness.

Students’ extreme anger, anxiety, and disapproval indicated that the computer-assisted mathematics class was not a productive learning environment but a site for struggle and resistance. Three weeks into the semester I learnt about the challenges my students endured in the computer-assisted class. Students conveyed their dislike of computer-assisted instruction and indicated their preference for a teacher instructed class. Some of the students did not understand the significance or beneficence of computer-assisted learning and many considered not attending class. It was apparent there were numerous issues regarding how computer-assisted programs were being used for educational purposes within this GED class. To resolve the conflicts and contradictions that emerged within the class I implemented cogen to bring students and teachers together to discuss the social dynamics of the

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computer-assisted class. My aim was to provide students with an equitable and productive learning environment that maximized the effectiveness of computer-assisted instruction, and to improve the learning of mathematics. However, from a curriculum and instruction viewpoint, in this chapter I endeavor to provide ABE instructors with some of the best practices for technology integration within their classrooms based on the perspectives of adult learners.

COGEN AND THEIR APPLICABILITY TO ABE

Donna Amstutz and Vanessa Sheared (2000) argue that curriculum and instruction in most ABE programs is teacher controlled and directed, rather than collaboratively planned with students. Paulo Freire (2000) refers to this practice as the teacher-student contradiction in which the teacher is solely responsible for depositing knowledge and skills into passive students; regarded as depositories who must comply and adapt to the knowledge bestowed upon them. This model of teaching and learning is flawed, as it does not allow for the production, reproduction, and transformation of knowledge or teaching of the other to create learning environments that support students' critical thinking skills. Critical theorists like Freire (2000) and Ira Shor (1996) have advocated for active dialogue and shared cogovernance within classrooms to end the teacher-student contradiction and improve the quality of education in schools.

The use of cogen challenges teacher-student contradictions through active dialogue and cogovernance to examine oppressive structures and afford positive changes within classroom encounters. Active dialogue is achieved through critical discussions between teachers and students regarding shared events within the classroom to eliminate conflict and contradictions. Subsequently, cogovernance is achieved through coteaching in which students assume the role of teachers to plan, enact, and implement curricula that support their learning needs. Through cogen teachers and students actively interrogate and reconceive classroom practices in an emancipatory manner (Tobin and Roth 2006). Participants explore and identify features in the curriculum and structure of the class that prevent and alienate the teaching and learning of mathematics and cogenerate necessary changes to be enacted in future classes to improve the classroom environment. Thus, teachers are not solely responsible for teaching but are taught through dialogue with students who assume the role of teachers.

MY INITIAL EXPERIENCES WITH COGEN

In this chapter I focus on my initial experiences with cogen as a method to improve curriculum and instruction in a computer-assisted mathematics class. The vignette presented in the chapter is from my first initial cogen session and it highlights a variety of difficulties experienced by students with computer-assisted learning and the weakness and strengths of such instructional tools from the perspective of GED students. To make sense of what was occurring within this class I use interpretive

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frameworks from cultural sociology, sociology of emotions, phenomenology, personal narratives and a transcript of a cogen session to examine challenges and beneficence of computer-assisted learning to enhance teaching and learning in a GED mathematics class. Researching the use of cogen in a GED mathematics classroom provides important insights regarding how educators can improve the teaching and learning of mathematics in a technology enhanced classroom when students critique, co-plan, and implement a new curriculum that benefits how they learn mathematics as adults. The cogenerated solutions implemented changed how mathematics was taught, learnt, and experienced within this class. I address change and what constitutes effective teaching and learning of mathematics in computer-assisted classrooms. However, other outcomes were attained such as student agency, identity shifts, mathematics success, the adaptation of new roles and instructional tools for both teachers and students.

Allies in teaching and learning mathematics

This vignette acknowledges an incident that took place three weeks into the fall semester regarding the implementation of a computer-assisted class, which afforded the opportunity to implement cogen to resolve the difficulties students were experiencing within this class. Cogen was introduced to students as a discussion among teachers and students regarding their shared experiences within the classroom from the perspective of the other. Those students who decided to participate in cogen were representatives of their peers given the diversity of students found in the class. As such, participants differed with respect to age, gender, ethnicity, religion, and mathematical ability in order to develop successful lessons and curriculum to improve mathematics teaching and learning of all adult learners. Essentially, the purpose of cogen was to identify characteristics within a computer-assisted class that afforded and prevented the learning of mathematics. Given the present disequilibrium within the class I did not ask for immediate volunteers, but insisted students think about this venture over the weekend. If students decided they wanted to be cogen participants they would meet at my office the following Monday at 5:45 pm. By showing up to the Monday meeting students verified their commitment to be part of cogen, eliminating any feelings of coercion.

The following Monday I wondered how many students would show up to participate in cogen. On Saturday many of the students thought it was a good idea and were excited to change the current structure of the class. As it approached the time of the scheduled meeting I began to assume that the students had forgotten about the meeting or decided that they did not want to participate in the forums after all. However, at 5:40 pm a work-study student alerted me that my ‘debate squad’ was here. I recalled asking him who was ‘the debate squad’ he indicated that they were three students at the front desk who were here for the 5:45 pm meeting. At the front desk stood Lorna, Jasmine, and Joseph my first cogen participants.

“The debate squad” consisted of four participants, three students and me. The metaphor of “the debate squad” reflected the students’ understanding of cogen as it

was explained to them that Saturday. I felt these students wanted to put forth their respective arguments to me, the designated authority for the computer-assisted class. My identity as the ‘authoritarian teacher’ was established the day of the incident when I used my teacher stance to regain control of the class. As I emphasized the importance of the class and the beneficence of computer-assisted learning, I also stressed the consequences for not attending class, thereby reinforcing students’ perspectives of my authoritarian role and identity. I was perceived as the individual who held the most power with regards to instruction and curriculum. To Lorna, Jasmine, and Joseph cogen was a new pedagogical tool, such as computer-assisted instruction, in which they assumed they had to get their argument across in the form of a debate. These expectations were based on their prior experiences with teachers and urban schools. The idea of debating was quickly disposed of after the first cogen session as the students realized that I was willing to make any changes necessary to the computer-assisted class and curriculum to improve how they and the entire class experienced and enacted mathematics in this learning environment. However, ‘the debate squad’ title remained as our identifier.

Episode 1

01 Wharton: Today the 15th of October so we’re going to have a conversation now ahmmm what Joseph said Saturday was correct. We gonna have a dialogue. And really what the ahmmm actual name for it is cogenerative dialogue. So there are some rules. Everyone has to have his or her say. Okay, so everyone has to say something. Okay. And so it will be ahmmm everyone has equity. Now one of the problems is the lab class. So we are here to find out ways to make it work. Okay. So can anyone tell me a feature of the lab class? At least one feature that you that you would like to see change.

In episode 1, I took a moment to reiterate briefly that the dialogues, which will ensue every week, were called cogenerative dialogues. I proceeded to introduce the rules of cogen, which set the tone and expectations for participants in this forum. I wanted the participants to know that their voices in cogen were valued. Any suggestions, perspectives, and solutions to problems regarding the curriculum or class structure were encouraged and important if we were to shape instruction for a productive mathematics classroom. Each participant had a responsibility to contribute to the discussion whether s/he was responding, clarifying, or agreeing to a peer’s contribution. Cogen became a place where students identified their learning needs from self-reflection of their shared experience in the computer-assisted class and other educational settings to improve the quality of teaching and learning.

As a collective, cogen participants bring different viewpoints with respect to their ages, gender, ethnicity, socioeconomic status, social experiences and formal

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education. For instance, cogen participants were mature-aged adults in their mid forties and early fifties while I (teacher-researcher) was in my early thirties. Lorna, Jasmine, and I acquired our formal education in the Caribbean whereas Joseph was educated in the United States. Although, we differed individually, academically, socially, and mathematically our perspectives regarding the computer-assisted class allowed for negotiation and co/construction of new ways of teaching and learning mathematics in a computer environment.

As the computer-assisted class was the primary motive for the implementation of cogen I proceeded to ask participants for their perspectives regarding why they disliked the class. Essentially, I wanted to know of specific feature(s) of the computer-assisted class that did not afford the goals I envisioned for this class. The chief purpose of the computer-assisted class was to provide students with an additional three hours of mathematics instruction in which they would review and develop their mathematics skills using a tutorial based computer program with an instructor present. The program used by the students was the McGraw-Hill Computerized (MHC) Interactive GED program (2002). A tutorial-based program that prepares students for the five-part battery of tests that comprises the GED examination. The mathematics program covered the content areas of number operations and number sense, measurement, geometry, data analysis, statistics, probability, and basic algebra. The program contained a half-length pretest (25 questions), full-length posttest (50 questions), interactive lessons, and an on screen Casio fx 260 scientific calculator. The MHC program was supposed to re-organize students' understandings of mathematics through interactive lessons, games, and quizzes enabling students to be active participants in their learning as they appropriated tools from the teacher-led class and the MHC Interactive program. Thus, students amplified their understandings of mathematics. However, the students did not share my assumptions.

TESTING THE JOY OUT OF LEARNING

The computer-assisted class was considered a non-traditional learning environment where students worked in a collaborative setting with their peers and the lab instructor to improve their mathematics skills. However, I was unaware and surprised at how certain characteristics within the curriculum I created and the computerized program were affecting students' dispositions and attitudes towards learning mathematics. For some students, the class was neither enjoyable nor engaging and feelings of discouragement emerged within this classroom setting. In episode 2, Lorna was the first participant to identify a specific feature in the computer-assisted class that caused her and maybe others anxiety within the class.

Episode 2

02 Lorna: The quiz at the end of the lessons.

03 Wharton: uhmmm

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04 Lorna: You know. You start the lessons and everything is explained to you.

05 Wharton: Uhmmm

06 Lorna: And you go according to the directions. And you work out the problems. Well some are correct and some are incorrect. But then when you come to the end of the lesson there is this quiz. You know

07 Wharton: Yes, the six questions

08 Lorna: That, that, yeah

The episode above focused on a six-question quiz at the end of each lesson, which caused Lorna anxiety as she worked in the lab to improve her mathematics process skills. The MHC Interactive program has two formal assessment features, a six-question quiz activated at the end of each lesson and a unit test activated when students have completed all the lessons within the unit. The assessment features of the program convey data in the forms of marks or grades to teachers and students regarding mastery of concepts and skills. In the MHC program, grades for lesson quizzes are assigned as follows: if students receive a grade of 65% or better on lesson quizzes they advance to the next lesson. Students with scores of less than 65% are directed to an instructional review followed by a second six-question quiz. Once students achieve a passing grade (65% or better) they are advanced to the next lesson however, students who fail are advised by the program to consult with the instructor. In the unit test passing grades are 65% or better however, if students obtain a failing grade they are not advised to review the unit or take a second unit test. Grades obtained in lesson quizzes and unit tests are visible to both teachers and students in the records section of the MHC program.

Lorna's reaction in cogen to the six-question quiz indicated that the built-in assessment feature at the end of each lesson undermined the purpose of the program as a resource to improve and enhance the understanding of mathematics. Lorna was not against testing but how the program was constructed to test students after each lesson aggravated the learning process. Lorna was already insecure about her mathematics ability and being frequently tested caused her to wonder if computer-assisted learning was a resource or a hindrance. Accordingly, the assignment of a numerical grade from quizzes and tests decreased Lorna's motivation to engage with the program. Lorna used the grades she obtained on quizzes and tests to determine her mathematical ability and ascribe positive or negative identity markers upon herself. This was revealed in an interview at the end of the semester.

Lorna, like many of her peers, was unaware that the grades obtained in tests and quizzes were subjective and did not reflect their true mathematics ability or identity as learners. Similarly, Jerry's failure to achieve 100% on tests and quizzes reinforced his perception that he was not a strong mathematics student. Students placed great significance on grades without the understanding that these constructs are abstract symbols, which can be misused, abused, and often are misleading when they are not

used to guide and scaffold students' learning to facilitate cognitive growth. Thus, I wondered where students' obsessions with grades catalyzed a mindset in which they were more focused on trying to achieve passing grades on quizzes and unit tests within the program than understanding the mathematics they were currently learning from the program. Reflecting back on this experience, I realize it was the rubric I created to determine the final grade for the class that may have caused confusion within the class.

The rubric for the computer-assisted class provided an academic disservice to students because it was based on one component, quizzes and unit tests. I did not take into account additional assessment techniques such as conversations and interviews with students regarding the grades they obtained within the MHC program nor did I consider student input when I created the rubric. If these additional assessment features were included within the curriculum I would have eliminated some of the anxiety and frustrations experienced by Lorna and other students. Thus, students would be able to understand their mathematics ability given teacher guidance with respect to grades obtained in the program enabling students to develop their own perceptions regarding their mathematics ability and identity. Lorna's experience with the assessment feature of the MHC Interactive program allowed me to consider how assessment (grades) could be effectively used in a class that utilized computer-assisted instruction to help students reach their respective learning goals. Thus, a new rubric was developed with cogen participants that reflected their developmental shifts in attitude, motivation, effort, comprehension, and confidence towards mathematics in addition to other academic activities such as worksheets and the use of another mathematics software program I discuss later in this chapter. Accordingly, a daily report was created to track students' progress on lessons in the computer-assisted class, in which they listed the grades they obtained. A feedback section was included in the report that provided students with informative and critical comments based on their performance. This offered students a holistic assessment of their ability in relation to the other work done in the teacher-led class. In addition, students could relay messages to the instructor in this section regarding their experiences in the lab, a concept they were working on, or the grades they obtained on quizzes and tests. This continuous cycle of feedback allowed students to critically consider their learning and understanding of mathematics against a range of criteria not just marks or grades obtained from exercises in the MHC program. Students were able to make sense of their grades from associated feedback in a positive manner to set appropriate personal and academic goals. Currently, the progress report is still utilized within my computer-assisted mathematics classes benefiting adult learners as they reconstruct their mathematics skills. Thus, students use assessment for learning rather than assessment as learning.

Restructuring how students would be assessed in the computer-assisted class created a positive learning environment. Students did not feel pressured if they failed a quiz or test but worked collaboratively with Sara and me to analyze and review the data gathered from tests, quizzes, and students' experiences in the classroom to construct

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knowledge about students' performance and achievement while creating appropriate support mechanisms. Thus, learning occurs during the enactment of mathematics with continual assessment providing a means to scaffold students' learning for productive encounters in the classroom. Information gathered from assessments within the MHC program was used to modify learning activities as students' weaknesses were identified. Thus, assessment with its associated feedback (in the form of marks or grades) accompanied by teacher explanations and guidance provided students with the skills teachers used to clarify what is considered good performance.

Despite the anxiety Lorna experienced with the six-question quiz in the computer-assisted program she did identify positive characteristics of the MHC Interactive program. In turn 04 Lorna states "You know. You start the lessons and everything is explained to you" indicating that the concepts and skills were introduced with clarity, engaging graphics, and interactive tasks. Each lesson in the MHC program began with an introduction of the objectives to be covered followed by tutorial-based instruction with embedded exercises to reinforce the material being explained. Lorna was able to take advantage of the graphic properties to visualize and organize her understanding of mathematics. The immediate feedback feature supplied Lorna with the academic support needed to make adjustments in the understanding and learning of mathematics because at times she lacked confidence in her mathematics ability. This feature of the program allowed Lorna to control her learning of mathematics as she accessed new ways of approaching and enacting mathematics.

THE CLASS WAS NOT WHAT I EXPECTED

When the administrators and faculty members decided to implement this additional mathematics class we assumed that all students knew how to use computers to enhance their mathematics skills. We envisioned students entering the computer lab sitting at their chosen terminal and appropriating the cultural tools from the teacher-led class, such as strategies, process skills, and procedures to inform and reinforce their mathematics skills. However, this was not the case, the computer-assisted and the traditional mathematics classes were not comparable, each had its own goals and motives. To the students the traditional class represented the norm and correct method for teaching and learning mathematics. Students were more familiar with this method of teaching and learning as it represented their expectations of a typical mathematics classroom originating from their years of academic socialization. In traditional classes students were aware of the division of labor for teaching and learning such as, their roles, their peers' roles, and those of the instructor. In the computer-assisted class some students were unsure of their respective roles in a "new" classroom environment where technology was regarded as a pedagogical tool to enhance the teaching and learning of mathematics. Thus, a major disconnection occurred between the computer-based class and the teacher-led class in which students developed their own epistemological beliefs resulting in these two classes developing their own trajectories and causing chaos.

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Episode 3

- 09 Joseph: Okay. Far as I figure out the ahmmm the lab. If you know at first. If the pers... If it is explained to you.
- 10 Wharton: Uhmmm
- 11 Joseph: Exactly what's going on with the programs? Exactly what is expected of that particular student?
- 12 Wharton: Uhmmm
- 13 Joseph: Exactly how you should take a step from step 1 to step 4, step 5.
- 14 Wharton: Uhmmm
- 15 Joseph: It becomes to be. It becomes easy. If you can have some type of explanation. At first ever. Like when we got into the class right. Where ahmmm Ms. Wharton explained to us that you are going to here at the lab class. That when you get here. She wasn't going to be her...Okay to us this was told right. But.
- 16 Jasmine: Without being tutored
- 17 Joseph: But like myself I didn't expect it to be the way it is like when I got into the program
- 18 Jasmine: [like sit at the computer]

Joseph, who identifies himself as African American is in his early fifties, appropriated turn 09 to describe his experiences in the computer-assisted class, which he felt impeded his learning of mathematics. Joseph expressed that the computer class did not have a definite objective to guide students such as him who were not familiar with using a computer-assisted program to support mathematics learning. Joseph stated in turn 11 that he needed to know “exactly what’s going on with the programs. Exactly what is expected of that particular student? Exactly how he should proceed from step 1 to step 4, step 5.” Joseph’s comments suggested that he lacked the knowledge necessary to navigate and productively use the mathematics program. Joseph, like his peers, the mature-aged adults of the class, found the computer-assisted class a site for struggle because they were accustomed to the dominant mode of schooling in which they used cultural tools as resources (e.g., pencils, paper, textbooks, and the teacher). As a novice user of a computer-assisted program Joseph did not understand how he could use the GED program as a tool to enhance his learning of mathematics. Thus, he became intimidated by the mathematics software, which led to feelings of inadequacy. Joseph and his peers needed to learn and develop the necessary schemes and techniques to effectively use computerized software before using the program to inform the mathematics they were currently learning. It was evident that the students

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in the computer class needed an extensive training session that demonstrated the program functions, contents, resources, beneficial properties, and how to integrate information gathered from the teacher-led and computer-assisted class to inform their learning and understanding of mathematics. A training session provided students with the confidence and support needed to engage with the mathematics software.

Another issue brought to the discussion by Joseph was that of pedagogical support for students. Joseph suggested in turn 18 that students needed “some type of explanation” indicating that in a computer-assisted class there were interactions amongst computers with humans rather than interactions amongst humans with computers. In other words, there was limited teacher-student interaction within the classroom with regards to learning mathematics from technology. Joseph’s statement allowed me to reflect on how teaching and learning were enacted in both classes. I realized that in the teacher-led class students were provided with the objectives and potential outcomes at the beginning of each lesson, while this form of teaching and learning was not implemented in the computer-assisted class. Listening to Joseph, I understood the frustrations he endured weekly when he participated in the computer-assisted class. The limited teacher-student interaction in addition to “without being tutored,” as indicated by Jasmine in turn 16, was not what the class had envisioned, thereby creating discontent among the students regarding the learning environment.

INTERVENTION: CHANGING CURRICULUM AND INSTRUCTION WITHIN THE COMPUTER-ASSISTED CLASSROOM

When cogen convened each week, I began my routine of asking students what has worked, what didn’t work, what did they like, what they disliked, and what changes in routines they preferred. This ritual provided cogen participants an opportunity to voice their opinions regarding the success and failure of our cogenerated strategies. From this discussion we were able to dissect the implemented strategies, which allowed critical questions to be asked regarding their experiences. My questions encouraged crosstalk between participants and me, which provided answers that assisted me in understanding the students’ interpretations and experiences of the computer-assisted learning environment that accommodated their learning of mathematics. Cogen was a site for mediating contradictions concerning the learning environment and mathematics. Thus, a central focus was to explore and create a learning environment that was flexible and adaptable to the needs of all adult learners.

The first cogen session prompted immediate changes as the participants articulated many difficulties (episodes 2 and 3) within the computer-assisted class. Students identified elements such as the six-question quiz, limited teacher-student interaction, differing pedagogies in addition to technical issues surrounding the use of computers and computerized programs, which caused difficulties in learning mathematics in a technology enhanced learning environment. Using this feedback, we collectively made adjustments to accommodate how students enacted mathematics in this classroom environment. One of the adjustments made to the class was that of the

implementation of mini lessons, which took place at the beginning of the class. Mini lessons provided students with a similar pedagogical approach to the teacher-led class. In the lab, Sara gave a brief introduction to the lesson approximately 15 minutes in length. The introduction featured the principles, vocabulary, and procedures students would encounter in the computer-assisted program. Mini-lessons provided students with the teacher-student interaction they desired in addition to a classroom structure they were familiar with. Thus, students were interacting with humans with regard to technology to enhance their understanding of mathematics. As Joseph stated in cogen “the teacher gives me the base... the computer cannot give me a basic understanding no way because [when] I am lost I am lost. I cannot say well computer what are you talking about? I can’t do that but I can do that once the tutor [Sara] give me that base.”

The second cogenerated strategy implemented was that of huddles. Huddles are mini tutoring sessions within the lab that supported individuals or groups of students who did not fully understand previous topics covered in the lab or the teacher-led classes. The purpose of huddles was to enact learning through participation in which students accessed each other’s knowledge resources to improve their fluency in mathematics. In huddles, students had opportunities to resolve their misunderstandings of certain mathematics principles supported by Sara and their peers. Students self-selected for this form of mathematics support, which took place at Sara’s desk with approximately one to five students who needed to master certain academic skills. Huddles were designed to be small in size because cogen participants understood the academic diversity of their classmates and not all students needed this form of extra support. Thus, huddles made it possible to review prior mathematics concepts without imposing on the instructional time of others. Students tuned in to this resource on an as needed basis and tuned out when not needed. Huddles broke down some of the barriers students erected concerning learning mathematics.

A third strategy proposed by the cogen participants was the implementation of SkillsTutor in the class. SkillsTutor is an online tutoring tool that targets instructional areas such as reading, language arts, mathematics, social studies and science to improve student achievement on high stakes tests such as the GED examination. The Downtown Center acquired a license of this web-based program in fall 2007 semester, to provide academic support to the entire school population that could be utilized from home. The program offers over 1,600 lessons that teach basic skills or thinking skills. Basic skills provided students with a brief interactive tutorial of a single academic concept such as dividing decimals followed by multiple-choice problems that reinforced and supported students’ learning with hints and feedback throughout the simulation. Thinking skills modules provided students with scenarios in which they use critical thinking and computational skills to solve problems. For example, in thinking skills problems students are given tasks such as choosing the most economical rental agency to hire a car for a three-day trip. They are provided with daily rates charged, rates per mile, and distance traveled in which they use their

whole number and decimal computation skills as well as their comparison skills to arrive at a solution in a step-by-step format. Thinking skills modules allow students to use multiple mathematics skills to solve problems similar to the GED examination however, there were not many of these modules within the program.

Cogen participants preferred SkillsTutor than the MHC Interactive due to its user-friendly format. In addition, cogen participants were aware that some of their peers did not have access to the Internet, and were not using this program, which they considered a valuable resource. One of the features students liked was the pretest at the beginning of each content area that created prescriptive assignments based on students' weaknesses. SkillsTutor allowed students to work on their identified weak areas and not all the lessons within a content area. The MHC Interactive prescriptive feature was not as interactive or advanced as SkillsTutor. MHC prescriptions directed students to lessons in the McGraw-Hill Contemporary recommended textbooks, which students did not possess. However, it was emphasized to cogen participants and the entire class that the use of these two computer-assisted programs should be equally weighted given that the MHC program was more tailored to the GED than SkillsTutor. SkillsTutor focused more on mastery and refreshing mathematics skills and was not strongly focused on word problems.

In addition to SkillsTutor the cogen participants indicated that some students did not like working on the computer for the entire three-hour class period. Many students indicated fatigue, eyestrain, head and backaches after sitting at the computer for long periods of time. The students proposed paper and pencil assignments for those who were having personal issues with the computers. To create supplemental assignments I used two mathematics textbooks that complemented the MHC Interactive program in addition to other sources, which students could complete in class. All students welcomed an approach that allowed some students to work on these assignments in the lab with Sara while others took the assignments home and completed them as homework. Introducing worksheets was a great idea contributed by the student participants as it showed that all students could enter the computer class and be supported by appropriate activities that suited their level of confidence and competence as they integrated technology effectively within their learning activities.

Cogen participants and I cogenerated many successful strategies that allowed us to create a mathematics curriculum and learning environment relevant to adult learners' individual needs and develop collective motives to succeed in a computer-assisted learning environment. Technology use within classrooms will become unavoidable in the near future as new devices are created to improve teaching and learning. Thus, teachers and students must work together to create and sustain learning environments that support and encourage the use of technology to improve learning. As a cogen group, we were able to create a technology-enhanced learning environment that allowed students to choose activities that fitted their academic needs. Thus, students tuned in or tuned out to the academic resources on an as needed basis to achieve their respective goals for learning mathematics.

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The adjustments made to the curriculum and class structures provided students with an equitable learning environment that afforded successful encounters in learning mathematics from computer software. Cogen participants incorporated movement within the classroom such as the huddles, teacher interaction with mini lessons, additional activities such as SkillsTutor and worksheets allowing a shifting of academic gears to keep students motivated and focused throughout their lessons. The idea of changing activities was a recurring theme within all our strategies, as it seemed the students welcomed a change of activities within this three-hour class period to make the learning of mathematics more engaging and enjoyable.

Cogen afforded opportunities to accommodate students' perspectives and learning needs necessary to create a curriculum that supported their mathematics learning that was responsive to their educational, social, and cultural experiences within the classroom. As Joseph indicated, "Everyone is taking the challenge the way it was designed." Students were more willing to take the initiative to use computers to improve their learning of mathematics after supportive measures were implemented to improve the quality of teaching and learning. Hence, cogen was a social and communicative activity, which established a classroom community of student-teacher and teacher-learner, enabling participants to resolve numerous contradictions. Many of the strategies cogenerated such as pencil-paper assignments, SkillsTutor, progress reports, and mini-lessons are currently used in all computer-assisted mathematics classes at the Downtown Center.

REACTIONS TO COGEN

Cogen provided a forum for Sara and me to freely discuss students' resistance to the computer-assisted mathematics class, the social and symbolic violence students inflicted upon Sara when they refused her help within the class, and what aspects of the curriculum impeded students' learning of mathematics. Cogen illustrated there is no "one size fits all" approach to teaching and learning but an ontological approach in which meaning is negotiated and co/constructed with others who are different from us through interactions. Many changes were observed within the computer-assisted class after the implementation of cogen. The most influential change was that of students' perceptions of Sara the lab instructor. After implementing cogen students felt comfortable approaching, interacting, and communicating with Sara about their problems with mathematics and the technical difficulties they had using the computer to learn mathematics.

As Jasmine indicated "we can go to her and not be afraid to ask her a question and have her come over to you and help with a problem... she [Sara] changed after we had the dialogue, she changed. She got up and came around and she helped." Sara's receptivity to students' viewpoints regarding her role and the implementation of cogenerated pedagogical strategies altered students' perceptions. She was not considered a monitor but viewed as the instructor of the class as she applied traditional pedagogical strategies the students were familiar with in which they began to tune

in to Sara's efforts to help them. Joseph indicated, "It came up a lot that ahmmm she don't seem to want to take the time. That came up a couple of times... But she had to learn to also you know extend herself, which she does now ... She'll go, 'you okay you can do it'? And I go no. I need help."

Interestingly, Sara noticed the effects of cogen on students, especially their attitudes towards using computers to enhance the learning of mathematics as well as to her. Sara indicated that students seemed more relaxed and interactive within the class. I observed this when I sat in on two lab sessions to view how students were interacting with the computer-assisted program and the implemented cogenerated strategies. I noticed students calling Sara over to discuss problems, having mini tutoring sessions between Sara and students, which afforded active peer tutoring within the lab even though students felt unsure about their mathematics ability. Students also took on leadership roles in which they informed latecomers of the lesson and objective of the day. It was evident there was a sense of solidarity (belonging and affiliation) within this class, which was supported by common goals and motives; that is, the improvement of mathematics skills in order to be nominated for and pass the GED mathematics test. A classroom community built on trust and collective responsibility among the students and Sara was established in which there were minimal acts of resistance towards the learning environment as it met students' learning needs.

Students also commented on my transformation from an authoritarian to a collaborator and co-learner. Jasmine mentioned that I got to know students as individuals and their desires and struggles as they tried to achieve their high school credentials. For Jasmine, my role as cogen participant, collaborator, listener, and willingness to make the necessary changes to the curriculum and classroom structures was appreciated as she indicated; "it was very helpful personally to me." Cogen altered the way I taught, and enacted mathematics as an instructor in the GED program. This exercise allowed me to learn many things about and from my students with the intention to improve how they interacted with computers in order to enhance their learning of mathematics, resistance to the curriculum I created, and reasons for returning to school to acquire their GED.

The positive experience with the "debate squad" inspired me to use cogen in future mathematics classes to improve the teaching and learning of mathematics. Each semester the way cogen was implemented was different and participants joined due to different structural features within the learning environment. In the winter 2008 semester, I held whole class cogen in the first 15 minutes of class to obtain a collective understanding of the mechanisms that supported or constrained mathematics teaching and learning. The following semester (spring 2008) six students self selected to be participants due to the various acts of disrespect displayed by three males students in addition to students' drive and motivation to improve their fluency in mathematics and successfully pass the GED mathematics test.

The cogen participants demonstrated that students who enter GED programs bring more to the classroom than the culture of schooling; that is, their prior knowledge and the rituals of schooling. Adult learners bring critical pedagogical knowledge to

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the classroom such as their experiences as learners, and instructional constraints, which can be used to reconstruct curricula and implement support structures needed to improve students' fluency in mathematics. Such insights regarding how adult learners navigate, accommodate, and resist artifacts introduced in the classroom to enhance teaching and learning of mathematics are critical to the success of classroom encounters. Our initial experience with cogen opened a new world of teaching and learning mathematics not only in a technology-enhanced classroom but also in traditional mathematics classes. It provided me with a dynamic tool to re-teach mathematics to adult learners in productive classroom environments that reflected the culture the students brought to the classroom from various fields (prior education, careers, religious participation, and social experiences).

Involving students in the teaching and learning process allowed them to enact new roles such as peer tutoring, which began in the computer-assisted class and migrated to the teacher-led class. In addition, students took charge of their mathematics education in which they made critical decisions on when they wanted to take the pre and post GED tests to identify their weak areas before the final examination. Viewed from these angles, the task of addressing contradictions in the teaching and learning of mathematics is a dialogic activity between and among students and teachers to produce new practices and schemas within the classroom environment.

MOST SUCCESSFUL SATURDAY CLASS

Of all the GED classes I taught on Saturdays this class became the most successful in which the majority of the students were nominated to take the GED examination. In my previous Saturday GED classes approximately five students would be nominated to take the test however, out of the eleven students who remained in the fall 2007 class, nine students met the requirements of achieving 410 or better on the GED predictor test administered as the final examination. Two students did not meet the requirements and Jasmine who participated in cogen was one of these students. Although Jasmine did not meet the requirements to be nominated to take the test she did improve her mathematics skills as her official predictor score increased by 50 points. Jasmine acknowledged that she learnt a lot of mathematics in the ten weeks of being in the class even though she was not nominated for the GED test. It was evident that the implementation of cogen helped Jasmine overcome some of her fears of mathematics as she confessed that certain experiences within a classroom setting can "turn me [Jasmine] off ...and drop out of the class" such as the previous GED program in which she was enrolled.

Out of the nine students who were nominated to take the official GED test seven passed the mathematics section while two failed with a score of 400. Lorna, Joseph, and Jerry were among the four students who achieved their GED credentials. Lorna and Joseph scored 480 and 450 respectively on the official GED mathematics test, while Jerry scored 560 indicating that he would be in the top 25% of his class rank. The other three students failed the writing section of the GED examination.

Lorna and Joseph's participation in cogen altered their perspectives of mathematics and use of computers as instructional and learning tools. Joseph indicated that his mathematics skills have improved and his comfort level in interacting with mathematics is evident in his success on the official GED examination. Furthermore, in the fall 2008 semester Joseph enrolled in the computerized bookkeeping program at the Downtown Center. This course focuses more on computer-assisted learning of bookkeeping applications than a traditional classroom. Thus, from a phenomenological perspective Joseph made a transition from being subservient to technology to becoming partners with technology (Galbraith 2006). Thus, Joseph was able to develop a mutual understanding of technology as a teaching and learning tool enabling him to control and improve his learning of mathematics. Joseph graduated in the spring 2009 semester with a certificate in computerized bookkeeping. Lorna also indicated that her mathematics skills improved and she enjoyed geometry, a content area she had previously disliked. After completing the GED program, Lorna enrolled in the information technology program at the Downtown Center, and was exempted from a remedial mathematics class due to her high score on the Test of Adult Basic Education (TABE). She has since graduated from the program and is currently seeking employment.

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JENNIFER ADAMS

20. PLACE AND IDENTITY: GROWING UP BRICOLEUR

Abstract In this chapter I present an emerging theoretical framework for thinking about and enacting place-based education for people who have a sense of place that may not be connected to a specific locale or is connected solely to the locale in which they currently live. I use a sense of *multiplace* that describes a sense of place that may be connected to multiple places at once through history, memories, identity, and lived experiences. Using autobiographical and phenomenological hermeneutic methods I address the questions of place and identity through an examination of my own experiences my transnational community. I demonstrate the complexity of sense of place for people with transnational identities and describe implications for teaching using place-relevant methodologies.

With increasing concerns about environmental issues, sustainability science, and sustainability science education, place-based education is moving towards the center of creating science programs and curricula that are responsive to local environmental knowledges and needs. In the U.S., place-based science education is often discussed in relation to students of Native American and Native Hawaiian descent using the local environmental ethos as a means of connecting indigenous students to school science (Chinn 2006). It has been also considered in urban contexts with African-American youth (Lim and Calabrese Barton 2006). Researchers in these contexts consider the understandings of science that occur in students' lifeworlds and how those understandings can be used as resources for teaching and learning science in the classroom context. While this is germane for students who are a) indigenous or b) have lived in an area for multiple generations, the question for me arises concerning the relevance (or redefinition) of place-based science education for a community that is neither indigenous nor has generational connections to their place of schooling. Perhaps the question could and should be rephrased to ask how immigrants and first generation people re/create a sense of place in an adopted environment and how this is relevant to their understanding of science as integrated with maintenance of an ethnic identity. Since science education research has identified that in order to connect students to science and afford them opportunities to develop positive identities around science, it is important to understand how members of a community construct their sense of place.

In this chapter I present an emerging theoretical framework for thinking about and enacting place-based education for people (children and adults) who have a sense of place that may not be connected to a specific locale or is connected solely to the locale in which they currently live. I describe what I believe is a sense of *multiplace* – a notion that describes a sense of place that may be connected to multiple places at once through history, memories, identity, and lived experiences. Using my own autobiography and analysis of some of my lived experiences, I describe how people may recreate this sense of multiplace in the environment in which they currently live. As I am dealing with the broader question of “what is it like to be a person with a Caribbean ancestry and identity living in Brooklyn?” I employ phenomenologically sensitive methods (Kincheloe, McKinley, Lim, and Calabrese Barton 2006) to bring to consciousness unconscious actions and notions. I use phenomenological hermeneutic methods described as “a continual dialectic between phenomenological notions conceptually understood versus their concreteness as known directly in [one’s] own lived experience” (Seamon 2002 ¶ 72). From a first-person perspective I investigate how my lived experiences and being part of an ethnic collective constructs my sense of place and notions about science and the environment. I extend my lens to my collective by inviting co-researchers – members of my ethnic/local community, including family and friends – to see what meanings of place emerge for us as individuals with different histories of coming to be-in our current place and a collective who identifies with a common culture. “Emergent meanings are co-constituted by the description of the experiences from [the collective] and in the interpretive process of the [researcher/individual]” (Seamon 2002, ¶ 84). Place can be “read” as a text (Kincheloe et al. 2006), urban spatial semiotics, which examines visual signs that people produce in a space to mark it with a particular identity (Shortell and Krase 2009). Visual signs can include gardens, visual art, and entire communities – each providing information about peoples’ sense of place.

AUTO/BIOGRAPHICAL MEMOIR

Beginning with the question of “who is the self that teaches science?” (Adams, Luitel, Afonso and Taylor 2008), this inquiry into place stems from my reflexive examination of my experience of growing up in a Caribbean household/community in Brooklyn, NY and how this influenced my identity in science and science world view. What also becomes increasingly important is my ethnic identity – as a second generation Caribbean American and how I utilize structures in my life and community to maintain an ethnic-Caribbean identity (Waters 2001). In this respect, I begin with bringing my own history – familial, cultural, ideological and educational – to my research (Lightfoot and Davis 1997).

Although I grew up in a very urban environment I never felt that I was far removed from the natural world. Even when we lived in an apartment that was situated 12 stories above the ground, I always felt a connection to nature and this was because my mother brought nature into the home. Our living room window was slightly

angled towards the rising sun. In this window, my mother placed many hanging plants that wildly grew until much of the sun was blocked. Hanging vines, stems twisting though the safety bars, and broad leaves pressed against the window in their efforts at photosynthesis, the living room window was more reminiscent of a tropical jungle than the urban cold concrete far below. This window was my connection to nature in the apartment. While the leaves changed color outside of the window, inside, I began to construct a sense of place that was always green and a sense of home that was tropical because of the way my mother used these plants to re/create her sense of place; her sense of “home.”

During the summertime, with the windows open, June beetles flew in to the apartment. My mother readily cupped them in her hands and placed them in ours. In her lived experiences in the Caribbean there was a fluid connection between the indoor and outdoor spaces and she re/created this expansive sense of place by allowing “friendly” insects to freely enter and leave our home. Summer was also the time when we were able to take family trips to local state parks, extending our urban jungle to the outdoors. It was in these spaces that I saw how my mother connected with the land in her Caribbean way. Her favorite thing to do in these places was to “climb and swing on the trees.” There is a picture of her wearing a red bandana and swinging from a tree at Lake Welch in a family album. “The woods remind me of going up Palm and John *Guine* Gully with the stream running down...” she recounted while looking at the picture. These were specific places in Jamaica where she spent much of her time “roaming the woods.” Her favorite places in the northeast are places that allow her to relive those moments. My siblings and I would run after her when she disappeared into the woods. We saw the woods through her eyes as she pointed out familiar-looking plants and told stories of her youth. To me, these woods were Caribbean-like places as they coalesced with my mother’s stories and memories.

Lake Welch and similar wooded State Parks were places that allowed my mother to enact her identity – her connection to growing up in a tropical rural place. She brought that place to the apartment with the way she allowed plants to brilliantly grow out-of-control in the living room and the way she welcomed the outdoors into our apartment. My mother even allowed a large green bug that stowed away on a head of cabbage to live in a Tropicana cup on our dining table for a couple of days until it eventually disappeared through an open window. My family eventually moved into our single-family home with a backyard. I remember my mother being thrilled at the idea of being able to have her own garden, like the ones she had while growing up in Jamaica.

My mother still lives in this house and through the decades, she has created a backyard that is a verdant urban oasis with a variety of plants – fruits, vegetables, herbs and perennials – for ornamentation and eating. My mother says she enjoys gardening because she loves to dig in the dirt. “It is relaxing!” she says with sweat running down her brow. She uses a small shovel and her bare hands to till the earth and plant her seeds. In her garden she has tomatoes and basil as is found in many northeastern backyard gardens, but the callaloo (*Amaranthus L.*) and scotch bonnet

peppers (*Capsicum chinense*) make her garden distinctly Caribbean. A neighbor noted, “you can tell we’re from the islands...we like to cook the food spicy” in response to a comment about the number of gardens in their community that had the hot “scotch bonnet” peppers (Shelby 2008, ¶ 9). In her use of “we” she ties her individual identity to the collective community of Caribbean immigrants. In her “we” she is saying “I belong” to this community – a community that is connected to multiple places at once. These peppers are an integral part of Caribbean cuisine and naturally grow in tropical environments, so people grow them outdoors during the summer in Brooklyn. These peppers in a garden are resources for enacting a Caribbean identity, both in their real manifestation and their connection to a distant land. As the gardener noted, their presence marks a Caribbean place in a northeastern urban context. For my mother and her neighbor, the peppers marked their identities as Caribbean and their gardens represented a place that is at once Caribbean and Brooklyn.

Growing up in rural Jamaica, any given place could provide a source of food. From deliberately cultivated gardens and plantations to randomly grown fruits, ground vegetables and herbs, my mother grew up in an environment where she was poor in material resources but rich in her access to seemingly endless plant-based food sources. She spent much of her free time “roaming the bush” during her childhood and eating fruits she found along the way. As a child, I imagined her in the lush environment she described to me. While eating avocados, mangoes, yams and sugar cane brought from the green grocers, I imagined myself picking and eating these same foods from the land in the same way that my mother did. My mother’s sense of place includes the notion that land provides food. This also deeply connected to an ethos that the abundance/richness of the land is of a spiritual origin, as evident in the lyrics of Bob Marley’s song *Is this love?* “Jah provide the bread” with bread referring to food in general. Plants, both cultivated and wild are equally valuable in my mother’s sense of place since they are spiritually constituted and provide life.

In her urban environment my mother holds no lesser view of plants. My mother often encounters plants that in the northeastern context would be considered weeds. She pointed out to me a succulent plant growing through cracks in the parking lot asphalt. “This is *pusley*,” she said while breaking off a piece, rinsing it with bottled water and giving me a small branch to chew on. “We eat this in Jamaica, *it grow wild!*” Years later I saw it for sale in the farm market as purslane (*Portulaca oleracea*). On another occasion, I remembered her bringing home a bag of greens she “found” in a local urban park. Excited, she cooked up the plants with onion and spices and brought a sample over for her aunt to taste. This was pokeweed (*Phytolacca americana*), a plant that grows wild in urban parks and is often considered a nuisance. To my mother these wasteland plants were no less valuable than the plants she cultivated in her backyard.

As an Outward Bound instructor I *felt* my mother’s sense of place while walking through the woods with students. In the same way that she pointed out plants to

me and told stories of them in relation to her youth, I told my students stories of plants in relation to my youth – my memories of my mother’s memories. For me, her stories were/are the connection to my Caribbean ancestry/identity; so being able to retell these stories was a means of enacting/reinforcing that identity. To me, the northeastern woods are a *multiplace*; it is a place that is traversed by my multiple roots (Knepper 2008) that connect me to both Brooklyn and Jamaica. I have a solid scientific understanding of the ecology and geology of the northeastern woodlands, however how I enact that knowledge is connected to my Caribbean sense of place that views the woods as a spiritual place of abundance.

My brother now lives on a Caribbean Island. Not the one of my mother’s birthplace, but the one of his current work as a restaurateur. On a recent trip, my brother walked us through his garden, “Mom, this garden is because of you! In his garden, he has bananas, plantains, green *gungo* peas, papaya and even a couple of staffs of sugar cane. My brother has no prior experience with cultivating tropical plants (other than potted plants); he began his gardens based on my mother’s recollection of the kinds of plants that she grew/experienced while growing up in Jamaica. Through trial, error and conversations with my mother he has been able to successfully tend a garden of tropical fruits and vegetables. He not only wanted to grow foods for his restaurant, he wanted to re/create home – a *place* for my mother that was similar to her stories from “back home.” As place is associated with a multiplicity of memories (Knepper 2008), my brother re/created a place that is a bricolage of my mother’s memories and his imagination.

As first/second generation Caribbean Americans, our ecological sense of place has been structured by my mother’s sense of place and understanding of the natural world. She transferred her image of “home” to us (Schmidt 2008) through her stories and recollections of growing up in Jamaica. Although we grew up in Brooklyn and did not travel to the Caribbean as often as some of our other relatives, we were the children of a mother who immigrated to New York (my father was also a child of Caribbean immigrants, but was born in NY) and, as Carola Suarez-Orozco and Marcelo Suarez-Orozco put it, are said to be “at once “here” and “there”” (2001, p. 58). In my experience of living in a Caribbean community, I have also found the *place* to be both here and there at once.

The “polyphonic bricolage” of place

What does it mean to live in a place? Is it just a matter of being situated in a specific locale at a specific point in time or does this notion of living in a place transcend the boundaries of the immediate to include one’s history, memories, and emotional connections with multiple places? Do these internal constitutions of places influence how one interacts with a place in which one currently lives? These are questions that I have been thinking about in relation to the notion of place and place-based education for our increasingly diverse and transnational communities. With these questions in mind, I have begun to observe my own community – a

transnational community that is predominantly inhabited by people from diverse Caribbean nations. I have been noticing how people in my community interact with and create place where they currently live, Brooklyn NY, and how these interactions are reflective of their connections to multiple places. I am ultimately interested in learning more about how one's sense of place in a transnational context constructs/mediates relationships with science and the natural world. However, my immediate work aims to capture how people enact their understandings of the natural world through their interactions with place. I am finding that I have to sift through understandings of home, identity and ethnicity as constituted through both memories and lived experiences because it is within those aspects that one can find how one develops a sense of place.

Joe Kincheloe, Elizabeth McKinley, Miyoun Lim and Angela Calabrese Barton (2006) mention, "the often-tacit nature of the way one leverages her sense of place makes it especially difficult to document in any final empirical way." (p. 144) In order to study one's relationship to place it is necessary to utilize methodologies that mirror how one develops a sense of place. In my desire to understand more about what I believe about a variegated sense of place, I employ a bricolage of theoretical frameworks and corresponding methodologies to elucidate the sense of place that I believe exists in transnational individuals/communities. Engaging in bricolage as a theoretical frame and research methodology means using the tools at hand and many different tools, collecting different parts from different sources with no blueprint on how to build/construct the knowledge and not knowing in advance what form the text/knowledge/research will take (Berry 2006).

Concepts from postcolonial theory challenge science educators to reexamine issues of cultural diversity, identity, globalization and inclusivity (Carter 2007). Wendy Knepper (2006) describes bricolage as a postcolonial strategy where one selects and uses resources at hand (including memories) in a deliberate yet improvisational way, "a bricoleur is always in the process of fashioning her various locales" (p. 79). The concept of bricolage is especially useful when studying the Caribbean community, as bricolage has been a term that has been used to describe the ongoing development of Caribbean or Creole culture (Schmidt 2008). Anthropologist Bettina Schmidt coined the term "*polyphonic bricolage*" to describe the continuous creation of "new" culture as Caribbeans interact with new environments and new resources, including people from other Caribbean and non-Caribbean nations. She describes bricolage as more of a rearrangement of elements rather than a mixing of culture as implied by creolization and hybridization. In the process of bricolage, people bring their cultural resources to bear as they select new resources in their new environment to use in very intentional ways, "even by altering the original meaning" thus creating new cultural forms (Schmidt 2008, p. 29). This is especially relevant in a multi/transnational Caribbean community (like Brooklyn NY) where cultures and languages from different islands have intermingled to create new culture, as evident in the way people have given places very Caribbean meanings albeit in a way that is local to Brooklyn.

THE DIALECTIC OF SENSE OF PLACE AND IDENTITY

Strategies like hybridization and creolization have been used to describe how people reproduce cultures in new places – whether through a forced or voluntary migration. The process of creolization in the Western Hemisphere began during slavery/colonial times as the slaves, indentured servants, Native Americans and European settlers negotiated space, resources and cultures in this new/different common space. Although there were aspects of the subjugated cultures that remained strong in the new creolized space, much of the cultural adaptations were to meet the norms of the dominant culture; that of Western Europe. For example, Creole languages were lexified with the European languages (hence English Creole and French Creole) rather than being dominated by African and Native American words and phrases. While the subjugated were inventive and found ways to resist the European dominated creolization, it had to be done in ways that fell within the given constraints so as not to challenge European dominance. In our current globalized context, there is an ongoing mixing of cultures that create hybrid spaces and practices. While West Indian cultures are still described in terms of being creolized, polyphonic bricolage as presented by Schmidt, offers a more postcolonial strategy because it ascribes a greater sense of agency to the bricoleurs in creation of their own culture.

Identity development also mirrors the process of polyphonic bricolage as the bricoleur picks and chooses the resources she will use to develop, confirm and maintain a chosen identity. For example, a person may choose a style of clothing, musical tastes and use of language to signify identification with the Caribbean. While there is a passivity of being “born into” a particular culture and therefore adopting those cultural norms, one can still choose to either embrace or reject that culture, or recreate a personal culture that reflects their individual bricolage. Teenage *Radio Rookie* Rayon Wright (2010) was born Jamaican but aspires to be a Korean Pop music producer. Upon meeting JYP, his “role model...the hottest music producer in Korea,” Rayon asked, “how does someone like me who comes from a Caribbean American background be able to bring that to the Korean market?” (¶ 78). While he has embraced Korean culture to the extent of choosing Asian dominated schools and joining a Korean church, Rayon still identifies himself as a Caribbean-American person – a person with a particular place identity. As a bricoleur, he uses his Caribbeanness and his affinity for “everything Korean” to create a new identity and cultural niche for himself. He is an active creator of the polyphony of culture that is Caribbean/Korean with evidence of his interactions and identity with place and a diverse group of people.

Like Rayon, I developed an identity that represents my polyphonic bricolage of place. I went from a Caribbean-American neighborhood and high school to a college in the Midwest. In this new place, being Caribbean was novel and being a New Yorker (from Brooklyn none-the-less) was a thing to be feared. I had to *place* myself within this culture that mirrored the sense of unfamiliarity that was

reflected on me. In the Midwest, I asserted my identity as both Caribbean and New Yorker/Brooklynite and sought out resources to confirm those identities, including a prominently placed picture of Bob Marley in my dorm room (at an evangelical school) and I sought out associations with other Caribbean students. This was the first time in my life where I had multiple groups of friends and thus began an identity differentiation that was largely associated with place and my activity with others (Stetsenko 2008). In different contexts, I developed the identity of a science student, athlete, and new wave (because of my choices in music and style of dress), however my friends always ascribed my Caribbean Brooklyn identity on me (Jen Jen Jamaica-head) as I was merging this identity with the others. Upon returning to New York, I found that certain aspects of living in the Midwest became interwoven into my sense of place, including features of the natural landscape: a particular color of a late autumn sunset, places in my local park that give me the illusion of big sky and my affinity for cowboy boots and chicken-fried steak. One creates an identity by finding one's *place* amongst others (Stetsenko 2008). For me the term place not only refers to situating oneself amongst others, but finding that place within that is associated with the geographical places where one learns her *place*; her role within a community. Place both shapes and is shaped by people's activities and creates a dialectic with identity.

Artifacts of a transnational community

In the Brooklyn Caribbean community, one will find representatives from each and every Caribbean nation, thus creating a transnational community. In this community you can find a sameness|difference dialectic where solidarity is built around those elements that members of this community have in common but are at the same time different. Languages, history, food and ecology are some aspects that demonstrate this sameness|difference dialectic. For example, people in a market will recognize the same fruit (chayote or *Sechium edule*) but may call it by different common names (chocho or christophine) and/or prepare it differently depending on their country of origin, but recognize the commonality of being intimately familiar with the same fruit, and use this fruit as a marker of Caribbean identity. The multiple origins (Africa, Asia, the Americas, Europe) of the people and cultural elements that create Caribbean culture are also similar; however, how they are enacted in different locales depends on the collective ethnic origins of people, the geology of the locale, and even different configurations of colonial plantation life (Benitez-Rojo 1996). People bring these similarities and differences when they immigrate to a new place and interact with a new locale with different resources enabling them to re/create a new cultural polyphonic bricolage. These similarities and differences also extend to notions of place and sense of place as all are working to re/create a sense of place in/with a new locale.

In her work entitled “(Up)rooted,” Barbadian artist Annalee Davis situates a small “purple heart” wooden house atop a mass of tangled *Cuccinia grandes* and *Smilax oblongata* roots. Her oeuvre is described as follows:

...(up)rooted refers to the constantly shifting notions of “home,” reconfigured with every move as human beings navigate their way between longings and belonging. Increasingly, “home” becomes a place carried within, as opposed to a fixed physical locale” (Davis 1997, ¶ 1).

Geographer Yi-Fu Tuan (1976) noted, “In artworks people’s experiences of life and the world are vividly objectified” (p. 267), therefore Davis’s work serves as a visual text with which to interpret her experiences with and meanings of home and place. While the term “uprooted” may connote a forceful disconnection between the past and present, it is the notion of home or sense of place that is carried within that shapes one’s identity and connections to place. Davis’s piece incorporates two plants commonly found in the Caribbean, one (*S. oblongata*) seemingly endemic and the other (*C. grandes*) an invasive from the Eastern Hemisphere. One of the roots has its place in the Caribbean and the other could be from multiple places – Africa, Asia and/or Europe. Many Caribbeans have a Caribbean place identity of “back home” as being tied to identity and to a notion of “knowing one’s history” (Sutton 2008). For first generation immigrants, it refers a place of birth, family and memories while for their children, it means a connection to ancestry and/or identity and is often constituted from the memories of the first generation (Schmidt 2008) and their own visits “home.” As Davis’s work and description implies home, as a place, is more of an internally constituted *process* rather than fixed notion related to one specific locale. Wendy Knepper (2008) describes the notion of place as “a mode of diversity, transversal memory and relation to the network of other places in the global imagery” (p. 163). In alignment with the notion of identity as an ongoing re/creative process (Roth 2008), one’s notion of place or sense of place is also an ongoing process that changes as one travels through/lives in/connects with places during a lifetime. Knepper’s (2008) re/reading of Martinican Creolist Patrick Chamoiseau’s work situates the concept of place or *Lieu* as a means “to constitute ourselves in networks of solidarity, of cultures, of exchanges, that traverse nations and territories ...” (p. 164). Similar to Davis’ work, Chamoiseau’s *Lieu* emphasizes a more internal and fluid notion of place with roots/networks that spread out/reach out to embrace/infiltrate/exchange with other places or notions of place. This rhizomatic notion of place is described by Jeff Malpas (1999) where he notes place is “internally differentiated and interconnected in terms of elements that appear within them” (p. 34). He continues to describe the interconnection, intersection, juxtaposition and nesting of places, thus within one place one can find elements of other places – place becomes a borderless and fluid entity. Malpas goes on to describe this nesting of places as a connecting point between place and memory, the “elements” within become

resources for the bricoleur to re/produce a sense of place that is tied to identity. Thus, identity is constructed in relation to place and to others (as the elements that appear within place).

There are visual signs that people create/inscribe a particular identity related to place (Shortell and Krase 2009). When I walk down the main commercial street in my community, I encounter storefront signs painted in pan-African (red, gold, black and green) colors and numerous flags representing the different Caribbean nations. Although these are obvious signs, these are important in marking the community as a Caribbean place. The more subtle visual signs include objects that move through the community, like the “dolla vans,” a grassroots means of transportation that harkens back to the 80s when public transportation service to this community was unreliable. These vans often carry flags, posters and business advertisements that are of relevance to the community. These visual signs structure the community and structure the social interactions that take place in relation to these signs. A Haitian youth with whom I shared a dialogue described such a place that was marked by a Haitian flag. In this place, he felt comfortable speaking Kreyol, eating *djon-djon*, and learning about/discussing sports and politics in Haiti.

While people use objects and signs to re/create places, people also use their bodies to do the same. As people move through space to create places, they carry their sense of place within and on their bodies. The visual signs they carry are means to restructure places for particular identity maintaining and confirming activities. Thus, sense of place is embodied as visual text is carried on human bodies that are moving in a way that enacts an association with place (Leander, Phillips and Headrick Taylor 2010). This is clearly evident in the Caribbean community during the annual West Indian Day Parade. A large boulevard is transformed into a Caribbean place by objects and moving bodies. As the main activity of the parade is movement (dancing, walking, *chipping*) down the “parkway,” people carry their visual signs of their Caribbean identities on their bodies. T-shirts, jewelry, flag color-themed clothing and most importantly, bandanas are worn to signal an identity with a place/a particular group of people. The young people with whom I share dialogues about place note the importance of wearing a flag bandana to symbolize one’s connection to a place of birth or ancestry. In these examples, place is a social artifact that is created (whether temporarily as a day’s parade or in the form of a relatively permanent business establishment) to maintain and confirm an identity associated with the Caribbean. Youth participate in activities in these places and this is where they learn much about their Caribbean identity, this is especially of note for first and second-generation youth whose experience in the geographic Caribbean may be minimal, if at all. The place-as-social-artifact contributes to a sense of place that is based on a re/creation of a place that is a central part of one’s ethnic identity.

Mangoes and shoes: A sense of multiplace

A shoe salesman was putting men’s shoes on the clearance rack and some of them kept dropping off the rack onto the carpeted floor below. “They sound like

mangoes!” he said with a frustrated chuckle. I overheard him and laughed. “Yeah, then we would stop the car and pick up all of the mangoes, you know they’re sweet when they fall from the tree”! He was from Puerto Rico and the sound of the falling shoes put him back in his tropical environment where things that made such a “thud” were fruits laden with sweet juices. For that instance, he was in two places at once, in the very tangible and present Upper West Side shoe store and in his ethereal past of Puerto Rico.

Although this event was not necessarily scientific in nature, it provides a wealth of information about Jorge’s sense of place. His sense of place is what I would call a sense of *multiplace*, adapting Miyoun Lim and Angela Calabrese Barton’s (2006) definition, I describe this as having a “living ecological relationship” between a person and several places at once. Jorge has a relationship to his urban space because it is a part of his day-to-day lived experience. However his lifeplace extends to include a place that is a significant part of his identity and memory, but is not necessarily one in which he currently resides. Rhoades scholar Marsha Pearce notes, “a person can respond or use what is available in any environment in a specifically Caribbean way and therefore she can always find herself in a Caribbean region” (2003, ¶ 8). For Jorge, the falling shoes became the resource that enabled him to enact his Caribbean identity – his identity as a person from a tropical place. Haitian writer Edwidge Danticat describes herself as having two homes, one in Haiti and the other in the United States, “so like most immigrants, I live and breathe through both prisms, both perspectives” (Bass 2010, p. 88). Like Jorge, Danticat’s sense of place is strongly influenced by his lived experiences in two places.

However there are others who may not have lived in a place and yet have a strong identity and corresponding sense of place that is influenced by their place of identity. Rosanna Rosado, the publisher of a New York Spanish-language newspaper relates her experience to a Willy Colon song, “it says that on the sidewalks of New York I learned for the first time the traditions of my grandparents, of my *abuelos*” (Tallo and Wertheimer 2010, ¶ 14). She notes that many people like her have a strong ethnic identity although they may have never visited the place, “it’s a place that lives in our hearts [more] than in our memories” (¶ 15). A child develops a sense of place based on the meanings her family ascribes to a place or several places (Derr 2002) as well as from her experiences in the community in which she lives. Thus a child growing up in a transnational community will develop an identity and sense of place that has a strong relationship to that re/created place that is Caribbean and New York at once.

Educating for a multiplace

As I described there are many factors that influence how sense of place gets constructed. In a transnational community, ethnic-identified youth might construct their identity around a Caribbean place, whether they visited or not. Their notions of place and identity are largely based on stories from their parents and their lived experiences in the home and in an ethnic-identified community. It is also important

to note that for Caribbean youth, many of whom are visibly of African descent, their sense of place is further complicated by their ascription and identity of being black in America. This creates a conflict in place because although a community may be a safe place to enact a Caribbean identity, it may also be a place of surveillance and interrogation by police, especially for young black males (Foner 2001). In a large urban park, a common site of place-based education for local schools, young black males are often stopped by police and grilled, especially if they are not “on their side” (read: middle to upper-income predominantly white side) of the park. While these youth may participate in a Caribbean festival or soccer games and other athletic activities when the park becomes a Caribbean *place*, they may not feel welcome in all areas of the park at other times, and thus may not feel a sense of ownership of and incentive to care for the park. To them, the park may be viewed as a place to enact an identity associated with the activity – a temporary place that is rented but not owned.

Place-based education that does not consider how youth construct their identities and sense of place runs the risk of being as disconnected and irrelevant as is often the critique of standards-based education. One cannot assume that everyone relates to the same places – communities and natural areas – in the same ways; one relates to place largely through the lens of identity. Educators desiring to create place-based experiences should learn more about what place means to the students for whom they are creating the experiences. Place-based educators should strive to connect youths’ lived experiences with learning activities and even allow youth to construct their own activities. This means affording youths opportunities to learn more about themselves as members of an ethnic group and of urban communities, in which they are positioned vis-à-vis policies and practices that govern the larger urbanscape. This is especially important for environmental science where the connection to and care for place is central in enabling youth to participate in and even assume leadership roles in improving the quality of life of their communities (Tzou, Scalone and Bell 2010). Affording opportunities for youth to express and explore their experiences with place facilitates youth developing a sense of ownership of public spaces that could potentially lead to a greater interest in larger environmental and quality-of-life issues in their communities and common public greenspaces.

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PREETI GUPTA, JENNIFER CORREA, MARCIA BUENO,
JENNIFER SHARMA

21. USING COGENERATIVE DIALOGUES IN AN INFORMAL SCIENCE INSTITUTION

Abstract In this chapter we document and advocate for the use of cogenerative dialogues as both a methodology and method to be employed for the purposes of improving teaching and learning in settings such as informal science institutions. We describe why such dialogues are useful tools, and why they are critical in revealing key ideas that are particular to informal science institutions. We present how cogenerative dialogues are used in situating Explainers, students who work as floor facilitators, as co-researchers. The authors, each having worked as an explainer, take a polysemic approach to data analysis and writing and use metalogues and voice-overs to preserve the polyvocality of the co-authors and the Explainers who are represented in this chapter. A number of key ideas emerge from the dialogues; ideas that we think may not have been possible had we not interacted about them in cogen such as: sharing strategies, understanding self and others' motivations for interactions, teaching and learning in diverse settings, reflexivity, and catalytic activity. We conclude by describing implications for the informal science field.

In this chapter we document and advocate for the use of cogenerative dialogues (cogen) as both a methodology and method to be employed for the purposes of improving teaching and learning in an Informal Science Institution (ISI) setting. We present how cogen are used in an ISI setting situating Explainers, students who work as floor facilitators, as co-researchers. We take a polysemic approach to data analysis and writing and use metalogues and voice-overs to preserve the polyvocality of the co-authors and the Explainers who are represented in this chapter. We, the authors, maintain our identity but use pseudonyms for Explainers presented in the data. The first author (Preeti) was the Senior Vice President for Education and family programs at the New York Hall of Science (NYSCI), the second author (Jennifer C.) was the Senior Manager of Explainers at NYSCI, the third author (Marcia) is the Program Administrator, and the fourth author (Jennifer S.) was an explainer at NYSCI. Preeti, Jennifer C. and Marcia worked as Explainers at NYSCI before moving into upper level positions.

FLOOR FACILITATORS IN ISI SETTINGS

Most ISIs have floor facilitators, many of them youth and college-aged, who engage visitors in conversations about science. They can be thought of as science teachers

who work in a free-choice learning setting rather than a school. Across the United States, there are approximately 350 science centers and of those, approximately 40% have a youth employment program (ASTC 2009), each providing significant amounts of training to its floor staff.

NYSCI, a hands-on science center in Queens, New York, has a formalized youth employment program called the Science Career Ladder Program. In this program, high school and college students are employed as floor facilitators and are called Explainers. For many of them, NYSCI becomes a hands-on lab where they learn to teach science, but in a science center environment. Explainers are a diverse group of people. The average age is 15–24 and the gender breakdown is 52% female and 48% male. The ethnic breakdown in 2010 was 28% West Indian/Indian, 26% Latino/a, 21% Asian American, 12% African American, 7% Caucasian, and 6% Other. As the percentages show, there is diversity in the makeup of the staff and this is because recruitment is conducted from approximately 26 New York City public high schools and 27 colleges. Walking around NYSCI you see both the Explainers and visitors engaged and speaking in many different accents and sometimes even dressed in styles representing their ethnicity. The New York Hall of Science has used an explainer model of floor facilitation for over twenty years. In the early years of the program, many Explainers chose careers in science teaching and claimed that working as an explainer contributed to their decision in pursuing a teaching career. Working as an explainer, one teaches to different audiences throughout the day. An explainer also gets opportunities to meet different kinds of people and construct social interactions with them. Through routine, but unique social interactions, an explainer develops effective teaching techniques and begins to appreciate the act of teaching and also how different people learn.

Inspired by this activity, in 2005, a National Science Foundation research project, *Collaboration for Leadership in Urban Science Teaching Evaluation and Research* (CLUSTER), was granted to the New York Hall of Science in collaboration with the City College of New York and the Center for Advanced Study in Education at the CUNY Graduate Center. In what follows, we describe CLUSTER as the context for the study presented in this chapter. We then describe how the need for cogen arose and the outcomes of implementing them in an ISI setting. We provide evidence of how cogen served as structures for supporting our growth as teachers and learners, aligning us to have shared goals even in the presence of diversity and contradictions. We conclude with claims for why cogen can be employed as a method for training floor facilitators in any ISI setting regardless of whether the floor facilitators are studying to become formal schoolteachers.

CLUSTER – A TEACHER PREPARATION PROGRAM

In CLUSTER, NYSCI and City College of New York, CUNY partnered to develop, implement and research a pre-service secondary science teacher education program where undergraduate science students take state-mandated education courses and

work as Explainers at NYSCI. The Center for Advanced Studies in Education from the CUNY Graduate Center conducted the research and was charged with documenting how the Explainer's experience serves as a valuable and unique opportunity to actually teach while learning how to teach. As Explainers, the pre-service teachers interact with visitors by engaging them in dialogues about science using exhibits as conversation starters. They also conduct demonstrations, facilitate discovery labs and assist with after-school programs. These Explainers attend weekly exhibit training and receive all of the support and mentoring offered to the rest of the Explainers corps (about 150 students) employed by NYSCI. CLUSTER was conceived to support teachers in developing reform-minded principles as a central objective because the team felt that teachers need to develop an understanding of teaching and learning as socio-culturally situated, and cogenerated through dialogue and discussion rather than transmitted through chalk and talk methods of teaching.

The guiding premise for the CLUSTER project is that in order to support students in becoming science teachers, we have to provide them with opportunities to practice teaching in low-stakes settings. April Lynn Luehmann (2007) advocates for such an approach to science teacher preparation and reminds us that pre-service teachers face great challenges in becoming reform-minded teachers. Their experiences as students and memories of their own teachers do not always mirror reform-minded teaching so they don't have experience or buy-in for such approaches. Their experiences during student teaching are often counter to what they have learned about constructivist theory. Luehmann invites us to design opportunities for pre-service teachers where they are in low-risk, low-stakes environments with a continuum of experiences and claims that traditional classrooms don't always offer such opportunities. Kenneth Tobin and Wolff-Michael Roth (2007) claim that talking about practice is very different from actually being in the act of teaching and we need to address the "rift between descriptions of teaching practice and enacted teaching practice" (p. 2). Each act of teaching is both *singular*, concretely enacted by this person in this situation, and *plural*, a possibility for acting in this culture generally" (Tobin and Roth 2007, p. 31). Explainers' experiences with visitors are individual acts of cultural enactment, and with each act comes their ability to embody the role of a teacher and develop theory about what techniques work or don't work. By developing the ability to maneuver (Roth, Lawless and Masciotra 2001), or to develop practices that are anticipatory, timely and appropriate to given situations, teachers can be prepared to the best extent possible to take advantage of teachable moments. Concurrently, they could utilize contradictory events and re/produce and transform culture in real time, working as an Explainer, whether they intend to become a science teacher or not, which supports the development of such skills in a pre-service teacher.

A teaching space, the exhibit floor, can be described as a field, which could be defined as a site for cultural production with specific structures and porous boundaries (Tobin and Roth 2006). Fields have structures composed of schema (ideas, beliefs), practices, and resources. Resources in this field consist of exhibits and fellow staff. ISIs, by definition, are places where all kinds of people (both school groups and

families) visit for different reasons. Visitors' motivations for a visit become a factor into how they experience the museum and its resources (Falk 2006). By interacting with different and unique visitors over the course of one to three years, Explainers have ample opportunities to develop, test and refine their approaches to teaching. They learn what works, what doesn't work, how to employ different strategies for different types of visitors, and how to engage them in conversations that lead to successful interactions. CLUSTER aims to take their experiences and link them to formal education ideas and structures (composed of its own schemas, practices, resources) so that students can apply their understandings to a formal classroom.

THE NEED ARISES FOR COGEN

Preeti's role as co-principal investigator for CLUSTER situated her to work closely with the project team from City College. She also had regular interactions with CLUSTER Explainers. As time progressed, she noticed that certain markers of identity development as a teacher emerged as these Explainers work at NYSCI. Her own personal experiences as a former explainer reminded her of how being on the exhibit floor and regularly working with visitors helped shape her interests in teaching and learning as a career choice and her own identity as an educator.

The CLUSTER team struggled to document how working with visitors mediated a change and growth in the CLUSTER Explainers. One aspect of data collection in CLUSTER was to audiotape each CLUSTER explainer interacting with visitors at a given exhibit, *Light Island*, at the time of entry into the program and then every six months. *Light Island* is a hands-on exhibit designed to demonstrate a number of phenomena related to light and offer multiple entry points for a visitor. It also has the potential to allow for visitor-centered investigations on light without prescribing a formulaic protocol. This exhibit is ideal to measure the potential shift in a CLUSTER explainer towards more visitor-centered reform-minded teaching.

In Spring 2008, the CLUSTER team felt that more support and mentoring were necessary for the CLUSTER Explainers beyond the coordinated coursework to the explainer experience and the weekly training they received as Explainers. While there were documented changes in their growth as Explainers employing inquiry-based methods in their interactions with visitors, the team felt that a more explicit approach through small group coaching meetings might be useful. Preeti offered aspects of cogen as an approach to the design of these meetings feeling that the CLUSTER explainer interactions with visitors needed to be taped, shared, and reviewed more regularly than every six-months, the protocol in place at that time. She also felt that from an identity development perspective and as a critical epistemological stance, the Explainers themselves needed to review these tapes, reflect on their actions and make plans for personal change. By having a voice in selecting their audio and video vignettes, and articulating and explaining personal experiences in a shared space and without concerns for assessment, the CLUSTER Explainers would find it safe and useful to examine and improve their practices. Ontologically, Preeti advocated

for this protocol because she knew from her Explainer days that during interaction with visitors, many thoughts and ideas flowed in her mind that could not be captured on tape, but would serve as an important data source for understanding the act. If her taped interactions were the object of discussion, she would want to narrate what happened just before, and after and the thoughts in her mind that afforded or constrained her activity in real time.

Different cogen groups were organized and Preeti, Marcia and Jennifer C., were designated facilitators along with others at NYSCI. Although we, the facilitators were responsible for organizing the cogen, we positioned ourselves as equal participants and not leaders during these meetings. Epistemologically, ontologically and axiologically, we felt that we would never effectively be able to support the Explainers in becoming more aware of their teaching practices by simply modeling for them. These understandings would need to emerge from within themselves and could in fact, emerge from them because they are culturally and historically situated students with vast experiences, outside of the program and also through the program. As Tobin and Roth (2007) noted, cogen are “an alternative to interviewing teachers about their experiences. First data are generated (by listening to tapes and talking about them) and then when we make sense of what happened, we evolve our understandings, and it provides a concrete situation in which to generate theory as part of research” (p. 85). This premise supported our decision to use this method as a structure for the meetings. However, we questioned the specific ways in which cogenerative dialogues serve as a useful methodology for ISI facilitators’ growth as teachers.

WHY COGEN IN A SCIENCE CENTER?

Cogen consists of interactive dialogues about “shared experiences of participating in a field” (Tobin and Roth 2006, p. 91). In this case the exhibit floor is the first field. However, a second field is produced in the cogen, where stakeholders (the Explainers, and the co-authors) have a shared focus of improving teaching and learning by using “current understandings to describe what has happened. In addition, we identify, and articulate problems, note contradictions, and frame options that provide us with new and increased choices for enacting teaching and learning. That is, these sessions can be understood as new learning environments that take classroom learning environments (Field 1) as the “object of inquiry” (Roth, Tobin and Zimmerman 2002, p. 9). In this research, we bring the experiences of Field 1 (the exhibit floor) into Field 2 (the cogen) and then back into Field 1. While much of the research on using cogen has been done in the formal education sector, it seemed to us that it was an appropriate way of structuring our meetings in a science center setting.

Emergence of key ideas as a result of cogenerative dialogues

A number of key ideas emerged from the dialogues; ideas that we think may not have been possible had we not interacted about them in cogen such as: sharing strategies,

understanding self and others' motivations for interactions, teaching and learning in diverse settings, reflexivity, and catalytic activity.

Sharing strategies

Cogen is a field where culture is enacted. Members who participate in this field—the collective—have a motive, a shared focus of improving teaching and learning techniques. Each individual member has her own goals for how to increase her own ability to effectively interact with a visitor. There is a dialectical relationship between the collective and the individual and as such there also is a dialectical relationship between motives of the collective and goals of individuals. Through sharing strategies, each of us works towards our personal goals, but that presupposes that we are also working towards the motives of the collective, to improve teaching and learning. In this system, the idea is not to become like the other at the risk of losing one's own style and identity, but rather to learn new perspectives. Using audio and video files of interactions as resources for learning about and discussing each other's styles of interaction, we see evidence of why Explainers choose to approach an interaction in a certain way and how they negotiate other people's perspectives into their approach.

Marcia: The first time I shared my recording with the group I was pretty intimidated by all the feedback I would get. It was my first time back on the exhibit floor explaining to visitors, after a few years of administrative work, and my first time having other people listen to any of my explanations. Before I started the taping I excused myself for my horrible explanation but then I realized that this was a common trend for all of us. Once the recording ended a new worry was the feedback I would get; will they be harsh or will they be polite and keep it nice? The great thing about these group meetings is that even if you do get “called out” on things you said wrong it is all done in such a way that allows you to walk away with a better understanding of what you need to work on and full of ideas to make your explanations better.

Preeti: Marcia, this was true for me as well. While my designation as a senior vice president for the institution is not forgotten, it has become less important and has faded into the background as my identity as fellow educator and a researcher has become prominent. This allows all of us to become more comfortable and reveal our ontological and epistemological understandings about learning and teaching. In addition to their growth as a teacher, the structures allow me to examine my own epistemological and ontological stances and growth as a teacher. We are able to share ideas and strategies and be reflexive about aspects of teaching and learning. Most interestingly, we are able to be catalytic with our understandings. I present a vignette, which demonstrates how the structures of cogen support minimization of the concept of an expert and reduce issues of power.

In the following vignette, we had just finished listening to an audiotaped interaction between Seema and some visitors at the *Biosphere* exhibit. This exhibit is a self-contained ecosystem—an enclosed glass structure filled with water, algae and dwarf shrimp. It was placed in NYSCI in the late 1990s, and continues to sustain life with ceiling light as the only input. It is a popular exhibit for facilitation because it demonstrates a unique phenomenon. Seema deconstructed her interactions with visitors and we all took turns and commented on it. Rhonda (another member of our group) stated in this conversation that she learned how to facilitate that exhibit from Seema. All of us have just described the main idea that we try to get across to our visitors with this exhibit. Some of us are interested in describing sustainability of life in a biosphere and others are interested in discussing the main idea of gas exchanges among two or more living beings in a system. Seema and Rhonda both tend to focus on gas exchanges, especially because Rhonda learned the exhibit from Seema, but Rhonda had just mentioned that she uses words like “how do plants grow” instead of “photosynthesis.”

- Seema: That works too. How do plants grow? (as a statement)
- Preeti: How do plants grow? (repeating as statement, Rhonda nodding her head in agreement)
- Seema: I don't know, first thing I think of is photosynthesis. I think too complicated I think. All these bio classes (inaudible) so how does photosynthesis occur.
- Preeti: Yeah so you think of the fancy way of saying and you forget the everyday way of thinking about it.
- Seema: But that is a good idea, I should use that.

Seema describes her affinity for wanting to use the bigger science words and claims that it is all of the biology classes she has been taking that force her to use fancier words. Rhonda, who learned the exhibit from Seema, describes that she gets the same concept across using everyday words, and prefers to do that compared to the science word as an engagement strategy. This sharing of strategies among all of us who have a preferred way of facilitating an exhibit contributes to our growth as teachers of this concept. Cogen becomes a structure where the stakes are low and collectively, we all know that learning new approaches with support for our individual goals are the motives of the collective. In addition, by definition, these dialogues are structured such that there is an acknowledgement and invitation for each person's right to be different and bring different perspectives to the meeting. While Rhonda learned the exhibit from Seema, she does not mind sharing her strategy with the person who taught her the exhibit. There isn't a sense of expert or master and apprentice. Power struggles do not seem to be evident to hinder sharing. Rather, cogen allows for multiple voices and reveal multiple ways of thinking. While Rhonda learned the exhibit from Seema, her way of thinking about it and owning it as knowledge become apparent in the way she teaches the concept back to the visitors. A different

way of conceptualizing this knowledge becomes visible to Seema and the rest of the group. In this way, sharing strategies becomes a way to bring to the surface multiple ways of knowing, of teaching and of cogenerating a plan for improved facilitation at exhibits. It expands our repertoire, supports our *spielraum* or ability to maneuver in timely, anticipatory and appropriate ways. We increase our ability to engage in more successful interactions than before mediating our identities as successful educators.

Motivations

ISIs are free-choice learning environments that are outside of school, but provide intentional learning experiences (Eshach 2007). People who enter these institutions can experience it on their own or choose to participate in a planned activity. Learning is usually not evaluated and typically is non-sequential. John Falk and Lynn Dierking (2000) offer us a framework to consider the structures that mediate learning in an ISI. This framework, the contextual model of learning, states that learning is dependent on personal, sociocultural and physical contexts and as these contexts dynamically change, so do the opportunities for learning. Embedded in this framework are the motivations for why one visits an ISI. John Falk and Martin Storksdieck (2005) theorize that there are five categories that visitors can be grouped into based upon their identity-related motivations when visiting a cultural institution. These identity-related motivation groups are explorers, facilitators, professional/hobbyists, experience seekers and spiritual pilgrims. Explorers are those visitors who are curious about what an ISI has to offer. Facilitators are those people who are supporting the learning in a group such as a teacher who brings a field trip or a parent who visits because her child is interested in visiting. Professional/hobbyists are those who feel excited by or close to the material being presented at an exhibit. Experience seekers are interested in engaging with the institution in some way. Finally, spiritual pilgrims are those whose primary motivation is to be *affected* by the experience, possibly learn something new, and have time for reflection and contemplation. Each of these groups visits with a particular outcome in mind. The motivation for visiting or the intended outcome of the visit can be mediated by face-to-face encounters with floor staff in an ISI and these encounters not only presuppose emotions but also produce them. Below we see these ideas emerge as a topic in cogen and how it supports Explainers in the development of local understandings about themselves as teachers and others as learners.

Jennifer C.: One topic that emerged during cogen is how both a visitor's and an explainer's motivation for being at the science center plays a major role in an interaction with a visitor. What motivates a visitor to come to the museum, go to a specific exhibit area, and interact with an exhibit? Once there, what motivates an explainer to interact with that visitor, and during that interaction, what keeps both the explainer and the visitor motivated to continue that interaction?

Visitors are motivated to come to the museum for a number of different reasons. These may include school trips, family outings, dates, school projects, interest in

learning something new or interest in checking out a new exhibit, to name a few. These motivations can play a major role in how Explainers interact with them. For example, on some school trips the students come with specific worksheets that they must complete. They are motivated by the fact that they have to find an answer to a question when they return to their classroom. Other students might see a school trip as an opportunity to run around and have fun. The Explainer has the tough job of trying to get the kids who just need to get the answer engaged in the topic, and interested in learning all the other cool things the museum has to offer. For the kids who just want to have fun, the Explainer needs to find the right way to get them interested in learning something. Sometimes an Explainer might be motivated to approach a visitor, but gets rejected because the visitor is “just here to have fun” or “doesn’t need any help.” Those moments can discourage Explainers from approaching other visitors. In cogen, Explainers have the opportunity to share these moments, come up with strategies to take back to the museum floor, and encourage each other to stay motivated and focused when negative interactions happen.

Preeti: During one cogen, I remember, the Explainers and I had just finished listening to a recorded interaction with one of the Explainers, which led into a conversation about visitors who are not interested in learning about the exhibit; they are visiting the museum just to have fun. Triggered by this conversation, Marina, one of the Explainers, offered a recent experience with a group of boys at an exhibit called Celestial Mechanics. This exhibit is designed as a gravity well where a visitor can push a button, which releases a ball with force onto a circular platform that has a hole in the middle. The ball begins to roll on the platform in an elliptical fashion, gaining speed as it gets closer to the central hole and eventually enters the hole. Marina had just finished describing how she had tried to help this group of boys, but the parent stopped her and told her to just let them push the button. The following transcript demonstrates how a negative interaction triggers a set of emotions and actions.

Speaker	Dialogue	Gesture and Tone
01 Marina	<p>I was standing there trying to talk to them. I am trying to explain to them, “Oh so what happens when, what kind of energy do you need,” whatever and then the ↑mom just completely cut me off and one point she goes, “oh let them just push the button.” And I was like, ↑are you serious? The mom cut me off just to tell the kids that they could push the button for the ball. And I am like, “ok, so have fun pushing the ball. ↓I am gonna go now.”</p>	<p>Excited with a frustrated tone. The words “are you serious” were not actually said to the visitor but are used by Marina to express an emotion of disbelief. Tone of defeat</p>

- 02 Jay You could kind of like do it like have some fun and then learn and then have some fun, for example, *Anti Gravity Mirror*, I just go up and start doing crazy tricks and then I sort of explain it a little bit and then more crazy tricks, and they have fun with it, because at the end of the day, you wanna have some fun while learning. What's the main goal, you want them to learn something and have fun at the same time Hand gesture of interweaving. Collective comments of "right" or positive head nods
- 03 All But a lot of the exhibits don't have that. Overlapping talk with the louder Explainer being caught on audio.
- 04 Seema That exhibit is a very entertaining exhibit. Think about *Celestial Mechanics*.
- 05 Preeti Yeah, do you have a strategy for that one?
- 06 Jay Take it easy. You know, let them press the button and let it go around a little bit and then say, "what did you notice?" because all you do at that exhibit is push the button and watch the spheres go around. Could be like, "Could you guys relate this to something?"
- 07 Marina Yeah, I was saying that. I had used that exhibit just before and it went fine. It was just that group which I found, I don't know. I shouldn't get offended by it because I shouldn't take these things personally, but I took it personally. I was so m:a::d. I was like, I can't believe it. Rest of group smiling or chuckling
Group discusses the degree to which certain exhibits are fun or are not fun.
- 08 Preeti Marina when you got so mad, what were your next five to ten minutes like?
- 09 Marina Well after I got mad, I was fuming right, so I was walking back and forth, I was trying to figure out why they wouldn't listen to me. I was like, you know what, screw it, I'll find another visitor, but first I ↓told another Explainer about the incident Collective laughter

USING COGENERATIVE DIALOGUES IN AN INFORMAL SCIENCE INSTITUTION

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|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 10 Preeti | Oh so you had to vent it out | Overlapping talk of rest of group |
| 11 Marina | I had to tell them and they were like, oh, its gonna be fine. And then I found another visitor and then I explained <i>Light Island</i> , so then I felt a little better, I was comforted by, kind of, explaining to another visitor. | Smiling collectively |

We presented Marina with the transcript of the vignette and invited her to interpret it. We each interpreted the transcript independently of each other. Marina describes her interpretation of the transcript in the white box. Preeti presents her interpretation in the grey box.

Looking back at the interaction, I believe that I acted more on my emotions than my senses. I should have not taken the interaction with the visitor so personally. I cannot force people to learn or listen in this case. I think that I find the situation unusual because it is usually kids that do not listen to Explainers, not adults. As mentioned in our last meeting, adults tend to stay long after they are bored because they do not want to be rude. And I believe that I pre-judged that the adult would “force” the children to stay and listen to me. Through similar interactions it becomes more evident that the Hall of Science is much different from a classroom. In a classroom, students have to listen to the teacher but at the Hall it is different, the visitor chooses if he/she wants to listen to the explainer.

Marina described her anger with this interaction knowing that she had just had a positive interaction at the same exhibit earlier that day. Jay offered her strategies, but in this case, she did not find it useful because she was using similar strategies in this interaction to what she had used in the past, which had proven successful with a different group of visitors. Marina, especially after venting to another Explainer, accepted that while she is angry, she was unable to control whether visitors will want to learn or not. She decided that she would find another group of visitors at a different exhibit and aim for a successful interaction in order to re-motivate her.

In interpreting both Marina and my own understandings of what happened in that transcript, I believe that Marina has developed an expanded agency that encourages her to deal with her emotions and immerse into another interaction. She may be rejected again, but she has had enough experiences to know that it could also be successful. She knows that for her own sake (individual) and for the sake of the job (the collective) she has to try again and risk another defeat that she may

take personally. Emotions are a key aspect of the schema produced in this field and are carried from one field into another. Bringing an emotion-laden experience from Field 1, the exhibit floor, as a thought object into Field 2, the cogen, allows us to develop awareness about visitors, their motivations, our roles as Explainers and as teachers. By examining the vignette of our discussion, and interpreting it through our own lenses, Marina and the rest of the group continue to make this topic a thought object as we each give meaning to what happened. This polysemic approach mediates the emergence of key ideas. Marina reveals that having many other similar interactions reinforces her understandings of the differences in structures between a formal and nonformal learning institution. Production of positive and negative emotions becomes part of the schema for an Explainer's developing identity as an educator. Due to the dialectical relationship of schema to practices, emotions mediate the development of practices that potentially lead to an increased frequency of successful interactions.

Jennifer C.: Explainers also have their own motivations for coming to the museum. Some of them may be motivated to get paid, earn credit for school or gain experience. Whatever their motivations are for starting the job can impact how they interact with visitors on a daily basis. Working as an Explainer, one experiences many different emotions and learns to navigate through them to produce successful interactions.

Preeti: As a high school Explainer, I remember wanting to go to work every Sunday because it made me feel good. In reflecting why it felt good, I realize that it was the feeling of interacting with visitors and seeing them excited about an idea, or seeing them learning something new or simply showing them something cool. In contrast, I also experienced times when I would approach a visitor and ask, "Would you like to see how this exhibit works?" and the response would be, "No, thank you." It was difficult to hear these words and similar phrases that might be characterized as negative responses. Since I did not have control over when those times would occur, I could only develop my ability to create an environment that had a higher chance of getting positive responses. Without realizing it, I was adapting my opening line to be more inviting. Instead of saying, "Can I help you?" I would say, "Wanna see something cool?" I was looking for body language and gestures that signaled that a visitor might be amenable to a social interaction. When I had negative experiences, I didn't have the choice of halting my interactions with visitors because then I would not be doing my job. As an Explainer, I was required to interact with visitors and for me, this meant developing a thick skin with those visitors who were not interested in chatting with me about the exhibits. I had to learn to develop strategies that led to more positive interactions as opposed to negative ones. Over time, successful interactions with visitors led me to build confidence in teaching science. I believed I was good at it, enjoyed this work and identified as being an educator.

Working with diverse learners

Ana Maria Villegas and Tamara Lucas (2000) advocate for providing those who are learning to teach with opportunities to rethink their own selves in the context of their students. When applying this to an ISI setting, we are offered a unique opportunity because physical context of the ISI is designed to foster social interactions (Falk and Dierking 2000) between people and between people and exhibits. It is often the role of Explainers to facilitate interactions between the visitors and the exhibit. Places like NYSCI attract ethnically and economically diverse visitors and Explainers have the opportunity to learn how to interact with and teach a diverse population (where the diversity can even change from moment to moment!). Explainers can observe how culture plays a role in level of engagement. They can think about and practice various ways to work with students who may have various disabilities. They can also develop pedagogical approaches that allow them to successfully interact with students *who may speak a different language than that of the host country. In the ISI setting, the explainer can become more aware of herself as a culturally situated being.*

Jennifer S: The diverse nature of both the explainer corps and the visitors at NYSCI led to the emergence of a topic of conversation of teaching to diverse students. Sometimes there are issues of accents, pronunciation, or even that the visitors don't speak any English in which case we have to find alternative ways of communicating such as using hand gestures, or drawings. The cogen meetings have become an important place for us to bring up issues we have with communicating with such visitors and developing and sharing strategies to be successful. We also learn about ourselves when we listen to the audiotapes realizing when we are speaking too fast or our own accents are getting in the way of effective communication with the visitor. Once, while explaining in *The Search for Life Beyond Earth* exhibit, I met a young girl who was struggling to understand an exhibit. I was able to tell that English was not a comfortable language for her. She had difficulty pronouncing some words and she very much reminded me of myself when I was her age. It seemed like she grew up in a multi-lingual house like me with Spanish as one of the languages. As we explored the exhibit together, new words like "microbe" were tough for her. She noticed the "m" word repeated several times, and tried each time to pronounce it. Afterwards, her classmates approached one of the exhibits, and before I could say anything, she gave them the whole explanation about microbes I had shown her not long before. I was so proud of her because that meant that she really understood what I taught her, and hopefully the experience gave her greater confidence and a new outlook on science. Another time, I was interacting with a young girl, about twelve years old who only spoke Spanish. We were at the exhibit about germs and importance of washing our hands. We spoke about what atoms are and what they look like- oxygen, hydrogen, carbon and how they will give a certain characteristic or specific

object when put together in a certain way. She understood when I was trying to pronounce oxygen in Spanish, that she said it correctly for me to pronounce it better. Then I showed her on the computer how atoms and molecules work together. When she understood, she explained the whole concept back to me in Spanish. Also, you could see it in her face that she understood. While I was in this situation, I tried and developed strategies that were working and then in the cogen groups, I shared those strategies.

REFLEXIVITY

In all of the ideas discussed above, the underlying premise is that of becoming aware of the unaware, or experiencing reflexivity. Our work as teachers can often become a routine and while we realize that each activity is a historical act and no two moments repeat, often what becomes habit for us blinds us from reflexivity. The following monologue from Rhonda exemplifies how it is easy to develop practices that are routine once you are comfortable with them, but become aware of these practices through structures of cogen.

During one meeting, an Explainer, Neel had just finished presenting his interaction with a group of eleventh graders at an exhibit called *Cheshire Cat*. This exhibit is structured so that our two eyes are focused on two different images. The exhibit demonstrates that even if our two eyes are seeing different things, our brain focuses our attention on the object that is moving and more interesting, causing us to overlap the images in our brain and produce an illusion. In discussing this interaction, a very small comment was made regarding making assumptions. At this point, Rhonda launched into a monologue about her interaction earlier that day at the cow's eye dissection demonstration with the same group of eleventh graders. This is a 20-minute demonstration where Explainers dissect a real cow's eye for the audience and review the function of each part of the eye and discuss related disorders. Rhonda is certified to conduct this demonstration and has performed it many times. Certification is a rigorous process of demonstrating content knowledge, presentation of material and active engagement with visitors.

Rhonda: When I was asking them questions about uh.. in the beginning it was just things like uh..normal things like uh..inversion, involuntary and stuff that I kind of thought you should know because you are gonna take your SATs, you are gonna go to college and I assumed because I knew it, that they would know too, and normal things like rods and cones and you've sort of heard about them. You might not know exactly what they do ... so at one point I asked them "do you guys know what rods and cones are?"

And this one kid kind of shouted out from the back, “Ms, you think we are so smart, but we don’t know what you are talking a:bou::t (laughter from all in the cogenerative dialogue). And that’s when I realized I shouldn’t assume that just because I knew when I was their age ... I mean a couple of them knew what I was talking about but I kind of assumed that just because a couple knew that I didn’t have to say it over because it was a big crowd. I didn’t ask what inversion is or when the image gets inverted. This one girl kept answering but I figured if she knew it others would kind of know. But I was wrong and I felt really bad. “Ms, you think we are so smart, but we don’t know what you are talking about” I said oh and I said, “I’m sorry.” It is my fault. I should have realized that I shouldn’t have assumed, so after that, I was sort of careful about explaining everything.

Rhonda reveals how she made assumptions and based it on her own experiences as a student. However, one statement from one of the students in her audience triggered her to realize that she was making assumptions and this was unacceptable to her. Cogen is a place for making visible different ontologies (Tobin and Roth 2007). For Rhonda, the cow’s eye dissection coupled with a discussion about her emotion and sudden awareness of her act of making assumptions allowed her and us to understand her ontologies about schooling and students. She believed that eleventh graders are preparing for college entrance exams and are only a few years away from college and should have a working knowledge of science words such as inversion and involuntary. Her reflexivity about making assumptions triggered the rest of group to recall and discuss their own experiences with making assumptions. Each of us took turns during that meeting and revealed moments when we made assumptions, which affected our ability to successfully complete our interactions. The conversation about assumptions became a blog post on the social networking site and other CLUSTER Explainers posted their opinions and stories about making assumptions. The posting below demonstrates how another CLUSTER Explainer added to the conversation by writing on the blog, offered his own examples and then revealed his struggle with another issue, that of, differentiated instruction.

Assumptions are ubiquitous everywhere we go. People are always assuming different things about different people. However, here at the NY Hall of Science this could lead us to a bad explaining experience when we assume certain things about our visitors’ prior knowledge. SIMPLEST examples of these are that we often speculate on whether to interact with certain visitors, because we may fear that they may already know about the exhibitions or get irritated for disturbing them. These are some of the chances we take and there are very few alternatives. But, most important, assumptions that we make as an Explainer are about our visitors’ prior knowledge. Believe it or not, this is where we

start losing our visitors. Let me give you a scenario: say you are explaining an exhibition to a group of people. Say its the optical lens .. and there is this visitor who seems to be ahead of others and talks about focal points before you get the time to fill in others with the basic principles about the lens and refraction what do we do? Just engage the person who is smart and lose others or ask the gentleman to hold on 'til others catch up with the discussion???......this often happens to me and I lose one or the other....(Harry, October 10, 2008, 2:24pm)

While Harry was talking about visitors and not students in a classroom, he is met with a challenge that new teachers often struggle with, differentiated instruction. Harry used the opportunity of talking about assumptions to bring up a whole new issue, which then led to a new set of conversations. Cogen, by design and structure, allow for such conversations to emerge and then trigger reflexivities in unexpected ways, all the while related to the motives of the collective. Elizabeth Davis, Debra Petish and Julie Smithey (2006) found that new teachers are often surprised about what students do or don't know as they begin to teach them, often under or over-estimating content knowledge. Rhonda was able to experience such contradictions because she could teach in low stakes settings and through participation in cogen share those experiences and plan for the next time. Teaching in a science center with diverse visitors affords an Explainer the chance to produce an experience that is modified and based on understandings of Self and Other. Over time, an Explainer can describe a change in her ontologies and can articulate her shifts as an educator.

Let's develop worksheets

Cogen affords opportunities for catalytic work, which emerges from the group and becomes a symbol of solidarity and group identity. Often, our cogen conversations were about helping students who had worksheets to complete at the exhibits. We would discuss our praxis, the length of the worksheet, the quality of questions, the purpose of worksheets or even if the worksheet was effective at meeting learning goals assuming that was the intention of the designer. Discussing worksheets became a regular activity in our weekly meetings even when we were not listening to a clip related to worksheets. In one meeting, Preeti asked them, "If you were a teacher now, and you had to design a worksheet, how well do you think...." Before she had a chance to finish the statement, there was a collective high-pitched response with a variety of words such "Awesome" and "we would be so good"! Her response was, "so why don't you"? After a few minutes of deliberation, we collectively decided that we were going to design a worksheet and we would actually test it on some students on a Friday field trip.

Cogen becomes a way for stakeholders to deal with contradiction and conflict and design changes themselves rather than waiting for policies and recommendations from teachers. They serve as sites for potential catalytic activities especially if they

reduce oppression and lead to more equitable classrooms (Tobin and Roth 2007). This story exemplifies how an idea emerged from the meetings to design a worksheet that the group felt would be better and more effective than ones they may have encountered. The group felt we had enough experience at not just seeing different worksheets, but helping students work through them to know how to recognize a quality question. Coupled with this was our comfort with the museum exhibits and the science content behind the exhibits. We negotiated various aspects of the worksheet, but we didn't necessarily have agreement on the style of the questions and the goal of the worksheet. Were we testing for knowledge? Should the question be such that the answer can only be found at one particular exhibit? Should it be a group oriented activity or an individual activity? Should it consume the entire field visit time or allow time for free exploration?

The following vignette demonstrates how one Explainer uses her awareness of a free-choice learning environment such as NYSCI and its benefit as a field trip site.

- 01 Preeti: So are we testing knowledge? (inaudible murmur and chatter from everyone)
- 02 Seema: I don't think...the Hall of Science is a more.. well we place ourselves as an interactive, fun museum. I mean if we are testing knowledge, we are not (inaudible). The classroom teacher teaches facts, like that is what we learn in college, learn random facts, you don't keep them in your head, you read and write it. I guess we should figure out a way to test retention(?) if possible, I don't know yet. (negative murmurs from the group) I don't mean retaining information like studying like when you see something interesting, you try to automatically to [retain it].
- 03 Rhonda: [But] how do you [test it?]
- 04 Seema: [I don't] know. That is why I put it out. (nervous laughter)
- 05 Preeti: Well retention, another word might be testing, um, looking for evidence for thinking. How 'bout that? Because retention is hard because we only see the kids once, but we could ...what you said is right, like, when they interact with an exhibit, it is not like they are blank slates, they have ideas in them already. (head nods) And the exhibit hopefully triggers some of the [same ideas].
- 06 Seema: [some type] of thought [process].
- 07 Preeti: [Exactly] some type of thought process. So does our question . is our question well designed so the answer demonstrates some type of ...
- 08 Seema: Understanding. (completing sentence)
- 09 Preeti: Understanding, thinking, critical thinking, some type of problem solving (tone of listing items) so does our question. Is our question well designed so the answer demonstrates some type of ...

- 10 Seema: An example of a question is for *Colored Shadows*. What would happen if only the red and green light was pointed towards the wall and the blue light was faced away? The only way you would figure that out is if you understand the exhibit and what would happen. I don't think it is something you can look at or someone could tell you. You have to stand there. Ok, you know what. You block the red light and you get a black space and that's a shadow from the red light and then the green light fills in the black space.
- 11 Naina: Yeah, we should have questions like that where to test it out, you have to work it out and not just have straight answers.

Seema is describing that the worksheet question should not test knowledge, but thought process. She struggles with the description of her ideas and is met with negativity from the group. Preeti helps her by rewording her interest and giving some new words for people to consider such as critical thinking and problem solving. The time Preeti speaks for as well as what she says becomes a resource for Seema to pose an example of the *Colored Shadows* exhibit, one that she has experienced in her work as an Explainer and has successfully used to elicit student thinking. This allows Naina to see the point and extend the idea by stating that we should create questions where students "have to work it out."

One of the key tenets of the authenticity criteria is to do catalytic work. Cogen becomes a field where such catalytic work can emerge from within the group. The decision to design and test worksheets for the purposes of providing field trip students a stronger tool for museum exploration demonstrates an interest for action and for improving circumstances. Tired of seeing students suffer through poorly designed worksheets, they question how to develop a worksheet that doesn't just test facts and figures, but encourages students to think. They discuss whether the questions should encourage collaborative inquiry or individual investigation. They are concerned with allowing time for free-exploration. These are ideas that reform-minded teachers consider and these pre-service teachers are not just thinking about the worksheets they would design once they are teachers; rather, making a difference now for students who visit NYSCI. They are ascribing themselves the role of a teacher, one who is concerned about student learning. In being in this role, they are forced to address many issues that practicing teachers face related to curriculum design, student learning and assessment. In essence, their identity as an educator is shaped by the activity of doing what educators do; design a worksheet.

IMPLICATIONS FOR INFORMAL SCIENCE INSTITUTIONS

In this chapter we provide evidence for how and why cogen can be used as a method for how ISIs conduct meetings for the purpose of planning, learning and transforming practices for floor facilitators. In this study the structures of a meeting focused on supporting the development of all involved as learners and teachers, and produced

activities that were educative and catalytic. The study was educative as we studied our own practices and shared our changing epistemologies and ontologies about social life through interactive dialogues with each other and then with others beyond our group, by means of a social networking site. The study was catalytic because we examined existing practices, made plans to address and improve practices in the form of worksheets, and invited participants beyond our group to interact and cogenerate with us. The data presented demonstrates that by dealing with issues of power, authority and claims to expertise we can collectively advance teaching and learning in ways that support our individual goals but also the motives of the collective.

ISIs are proud of themselves for giving their education staff opportunities to work collaboratively, to plan and learn strategies and techniques oriented towards reform minded teaching. Often, the meetings aim to support staff in developing awareness of self as teachers and learners, but curriculum planning and sharing of new activities become the focus. Employing cogen allows education staff to take a step back and develop reflexivity on their own practices as well as those of others. In those ISIs where there is a vibrant floor staff (youth or adults), much time and money is invested in developing training programs where people can learn how to interact with a visitor – engage them in conversation and use reform-minded approaches to support visitors in their own discoveries about science. Bringing the method of cogen into the training plan can support these efforts in profound ways. Both for education and floor staff, taking the role of researcher and developing local theories about teaching and learning have great implications for improvement of practice and advancing science education as a whole.

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CHRISTINA SIRY, CAROLYNE ALI-KHAN & DYLAN SIRY

22. POLITICAL ENGAGEMENT AS A CHILD: RETHINKING, RESEEING AND REINVESTING YOUTH IN POLITICAL PARTICIPATION

Abstract This chapter explores political involvement of youth through the perspectives of the third author, Dylan. We reflexively consider Dylan's involvement in politics to extend his perspectives on political participation and analyze the ways in which politics impact children, and in turn, how children impact politics. Pushing back on the popular notion that children are not able to be 'political' because they are too young, we weave Dylan's voice throughout a discussion of the role of young people in politics grounded in critical theoretical perspectives. We position childhood as a contested and constructed space, and we examine the historical construction of childhood to search for evidence of the child who is unable (and not enabled) to be involved in an 'adult' world. In refuting this, we turn to one young man's experiences to elaborate that many youth have a predisposition to critical political thought, and Dylan's perspectives become a lens to underscore the possibilities for encouraging youth to politics.

SOCIOPOLITICAL INVOLVEMENT AS A CHILD

It's not important to be good. It's important to be good for something.
(Miles Horton 1990, p. 35)

Spring 2012: Images of the 'Occupy' encampments being cleared away trickled down media screens. More than a year has passed since that spring and the Occupy movement camps are long gone, but the consciousness of wealth inequity that they brought into popular focus has left its mark. Social class is no longer a taboo topic for today's youth who believe that class trumps race as an explanation for inequity (Hunigan 2013). The dialogues about 'the 1%' who brutally exploit workers, the planet and political systems were full of passion and vitriol, they ignited a fire for justice in youth. Dylan Siry was one of those youth. For him the words and images of the movement were shared and re-shared on social networking sites. Although just sixteen when the movement hit its fevered pitch he was keeping track. He recalls being an active participant in disseminating and analyzing the media that had finally decided that 'Occupy' was worth noting. He was not alone. Media images reveal that children were making signs and bringing food to protestors. Beyond this, they were participating in blogs, marches and uprisings, while educating themselves on the issues that have led to brutal economic hardship and this moment of public uprising.

Dylan Siry is the third author of this chapter. He is a young man who believed then, and believes now, that ***the Occupy Movements are all about fighting for our collective future***. Political engagement is not new to him. He recalls the night of November 4th 2008, when he was thirteen-years-old and glued to the presidential election results that poured in from across America. He was too wired to be sleepy, that moment meant too much. He believed that the election would change the prospects of his life. He was not alone, texting back and forth with other barely teenage (and younger) friends, he joined thousands of young people who felt, and continue to feel, the need to be politically engaged. Too young to vote, but not too young to care, these children are not the self obsessed dupes of a shallow society (as the popular media claims about youth often assert), instead they shared and continue to share an enthusiasm about the election as well as the issues that were highlighted during the election campaign. In recalling his zeal over the election, Dylan explains, ***the decisions made will effect me the most, however, I do not get to decide who gets to decide what happens to me...***

In this chapter, we reflexively consider the lived experiences of one adolescent (Dylan) and his sociopolitical involvement during a culturally turbulent time. We do this with the intent of extending his perspectives to explore the ways in which politics impact youth, and the ways in which youth impact politics, and in doing so we ground our discussion in critical theoretical perspectives. Our analysis emerges from the perspectives gained from our individual as well as shared histories. We are a team of two educators and one teenager who come together with our different perspectives on the world and its issues in order to highlight and document the political involvement of youth. We are all interested in the topic as we share the belief that “to create vital polities in the future, the challenge is to get more youth involved, which leads us to the question of how this involvement happens and how civic competence is learned” (Youniss, et al. 2002, p. 129). In order to understand “how this political involvement happens” we focus on the lived experience of such involvement. In what follows, we highlight Dylan’s perspectives and extend them through theoretical analyses grounded in critical perspectives. We note “the frontier where information about the world collides with personal experience is the point where knowledge is created” (Kincheloe 1999, p. 321), and as such, Dylan’s reflections are highlighted in bold font. We also believe that “the world exists as it does because of the myriad of relationships and structures constructed by human beings, to which we all contribute” (Darder 2002, p. 65). Thus, we conceptualize, analyze, and explore the complexity of the construct of ‘politics’ by surrounding it in meaning through the experiences of one politically involved teenager.

REFUSING THE NOTION OF POLITICS ELSEWHERE

“Life is elsewhere.” (Milan Kundera 1973/2000)

As we look to the future through the eyes and words of Dylan, let us return for a moment to the past. The word politics comes from Greek *polítikos*, from

πολιτῆς, citizen (the American Heritage Dictionary 2009). Politics, as a term and as a concept, is interrelated with being a citizen. The history of the word that encompasses a dialogical relationship between the State and its denizens is relevant to our analysis of youth and politics. We see youth as members of a political class as well as the recipients of politics. In short, politics matters *for* children and we contend that very often it also matters *to* children.

A young person like me can have many perspectives on politics and his role in the system. Politics is about more than just political campaigns, and it is important for kids to be involved and understand who is making the decisions that affect them... Remembering that politics is about power, kids need to be aware of how they are placed in society and they need to keep an eye out for moments when others may try to manipulate them or recruit them into doing things that they do not want to do, or that they do not believe in.

As Dylan defines politics, he presents a living and complex understanding of it. Politics is simply not something that happens ‘elsewhere,’ it is about understanding and fighting for ‘what you believe in’ because it impacts your life and the lives of others in your community. Dylan’s definition of politics differs sharply from the definition generally found in schools. Schools infamously compartmentalize meaning and reduce the term ‘politics’ to its lowest common denominator in which ‘politics’ in the classroom is reduced to pictures of the white house, checks and balances, and a blurb about the glory of Greek democracy. Politics is what happens in impressive architecture with men in suits. Politics is the business of others. Joe Kincheloe (2008) critiques schooling that ignores the political. He argues instead for education that embraces encouraging young people toward understanding and engaging in the political in order to create a humane and just society. Our experiences as educators have however found such classrooms to be rare. We also find it somewhat absurd that children who are structurally removed from conceptualizing themselves as being able to be involved in politics are expected to magically become political animals at the age of eighteen¹.

As a term, *political* does not fare much better in popular culture where it is most often used with reference to the institutionalized relationships between states and countries, and their citizens, as well as the activities within an organization or a company. Against this context we define politics broadly. Certainly institutional structures are central to considering the role of politics in the lived experiences of youth, but we see it as paramount to also shed light on the day-to-day ways in which politics emerges in human relationships. Thus, in our conceptualization of politics, we mean it as a construct that is concerned with how people make decisions, in the context of relationships that involve struggles over resources and collective needs. We situate this perspective of power as the control over the distribution of knowledge, goods, and the ability to influence or affect lives. Inherent in this view is an understanding of the activities and purposes of institutions and the ways in which these structure human experiences.

POLITICS IMPACT YOUTH; YOUTH IMPACT POLITICS

Politics are in the ‘big picture’ politics, like elections and policy decisions, as well as the day-to-day, ‘on the ground’ politics that affect youth. Youth like Dylan are aware that political decisions can have strong influences on children’s lives and that children in the world are involved in, and affected by, politics in a wide variety of ways. They are cognizant that some of the larger social issues facing youth today are impacted by political decisions, and decisions are made every day around the globe over issues of poverty, homelessness, war, children’s health, and the environment, all of which affects young people. Dylan explains,

Youth like me are impacted by policies, like those on the environment, because as global warming and pollution increase, they lead to a deterioration of the world’s environmental conditions. Kids like me will grow up in this world and will be left with a world that is not as safe and clean as when the adults making the decisions were young.

Political decisions about poverty policies can have serious consequences on kids and their families. Decisions about funding for low-income housing, food stamps, and programs that support families are all connected to political decisions. The percentage of poor children living in poverty has risen a lot and so, poverty policies are extremely relevant to children’s lives and development. Children’s health programs, like insurance for those whose families do not have health insurance, are political issues that effect their lives and health as well.

Dylan’s schooling has emphasized ‘citizenship’ or ‘civics’ in his social studies courses, yet implicit in framing what it means to be a ‘good citizen’ often is the notion of patriotism, love of country, and allegiance to government. The complexities of the responsibilities between a citizen and a community and between countries and their governments are reduced to ‘good’ and ‘bad’; following rules and breaking them, allies and enemies, crime and punishment.

Political decisions and relationships between countries and governments can lead to war. Boys are particularly vulnerable to wartime politics, as military recruiters often target them.

Rather than setting up binaries between good and bad, we see possibilities in supporting students in the process of conscientization, which “permits one to respond to the sociocultural realities that shape one’s circumstance by developing, in concert with others, interventions that interrupt forms of oppression” (Britzman 1991, p. 25).

Notoriously children ask ‘why?’ Dylan notes, “Asking why challenges what is, and can help other people to see that there are other views.” By asking ‘why’ political kids challenge everyone to think twice about that which may be, “purposefully organized when (it is) merely purposefully implemented” (Slater 2002, p. 69). In asking why, youth can have a key role in redefining ‘what is’ as Dylan stresses,

as they push back on structures with the ultimate result of having greater agency. Diane Milstein (2010) has stressed the consistently undervalued agency of children as ‘political subjects’ as she examines how children’s collective actions can change the structures of authority. There are a multitude of ways that youth can and do become involved in challenging ‘what is’.

We can try to bring about change by advocating for things we believe in; we can do this by ourselves, and we can also organize others to try to bring out changes in things that we believe are unjust or unfair. Being politically engaged can involve writing letters, sharing information, talking to other children and adults, informing ourselves, participating in blogs.

Dylan’s words stand in sharp opposition to the messages in popular culture that often assert that youth today are increasingly isolated and individualistic as they waste their lives in online trivia. Although we do not wish to position Dylan as a savior, counter-story example of ‘the new youth who will save the world,’ we do note that his views (and the concerns and energy of youth like him) represent the face of a generation who are concerned with connecting to collective goals. There is a solidarity that comes from working together towards common goals, and having shared political viewpoints can lead to feelings of belonging to a group. Randall Collins’ (2004) theory of interaction rituals presents a framework that positions the role of group assembly, mutual focus of attention, and a shared mood as ingredients that work together to generate group solidarity and emotional energy. Feeling connected to others, as a part of a group that shares your viewpoints, is important to many young people, and Dylan argues for solidarity as essential.

When people belong to a political party, or group, they feel like they are connected to other people who share their views on certain issues.

Politics and social justice are connected, and politically engaged kids work against injustices in their communities. The community of a young person can be large, like a country, or small, like a school or a neighborhood.

Politics are at play in all these places, and it is important for youth, like all members of society, to speak up for things that are unfair or unjust.

We can take initiative by writing letters to politicians, to lawmakers, to newspaper editors, to company owners. We can be involved in our schools, by joining clubs, joining organizations, and running for school office. Kids who are a part of the politics of a school can work to have official say in changes that schools might start, such as recycling programs or supporting school lunch programs with local foods.

Within the social structure of a school, politics extends to relationships, and the everyday relationships and practices of youth become important political considerations of the processes of social participation.

We can reach out to people who are different from them, and fight discrimination in their schools and communities. By doing so, kids can speak out against things that are unfair, unjust, and wrong.

AGENCY AND HOPE

A central tenet of the sociocultural frameworks we adopt is the dialectical relationship between agency and structure (Sewell 1992). Dialectical relationships acknowledge that there are parts to social existence that constitute the whole, and they cannot be separated. Thus, the dialectical relationship between agency and structure implies that the two constructs presuppose each other. “When we look at human actions, they cannot be understood without simultaneously considering *agency* and *structure*, which therefore are like two sides of a coin” (Roth 2005, p. xxi). In considering Dylan’s political experiences as a young person, we reflexively consider the ways in which structures (as the schema and resources available to him) afford agency (the power to enact social life) and in turn, how these agencies produce structures. This framework enables us to identify structures that may create or hinder opportunities for young people to gain agency, and to consider how their agency can impact the structures in their lives. Roger Hart (1992) has noted that children’s participation in society begins in infancy, when they “discover the extent to which their own voices influence the course of events in their lives” (p. 4). He continues by mentioning that the nature of the influence that an infant brings to their society varies depending upon the particular situation in which the child is living. Nonetheless, it is interesting to note that with politics and participation defined broadly, we can consider children’s involvement and agency beginning quite early. Herein we focus on youth, and in our use of the term, we refer to adolescents of pre-voting age.

Another important point that we seek to stress here is our critique of the popular classroom notion of apolitical and/or neutral perspectives as being inherently ‘just’ and ‘fair.’ We contend that implicit in some ‘neutrality’ is an assertion that equates justice with a bystander’s lack of involvement in the world. As teachers (the adult authors) have all too often seen ‘neutral’ classrooms that as they attempt to ‘balance opinions’ send the message that fairness means not taking sides, essentially the corollary of this is that injustice is nothing to get upset about and the veneer of contentment is to be upheld at all costs. We contrast this with the words of Paulo Freire, “The struggle for hope means the denunciation, in no uncertain terms, of all abuses, schemes, and omissions. As we denounce them, we awaken in others and ourselves the need, and also the taste, for hope” (Freire 1998, p. 106). As young people like Dylan denounce neutrality and situate politics in their own lives and demand to be heard in keeping with Freire, they define politics as hope and the political as something not far removed from them, but firmly placed in the here and now.

OLD ENOUGH TO FIGHT

We argue that there is a need to push back on the popular notion that children are not able to be ‘political’ because they are too young to have perspectives on political issues. In order to critique this idea we present a very brief glimpse into the historical construction of childhood to search for evidence of the child who is unable (and not enabled) to be involved in an ‘adult’ world. In essence arguing against the notion that youth are not/should not be entitled to political ontologies, we ask ‘why not?’ and look to history to guide us.

Anne Higonnet (1998) powerfully argues that the Enlightenment created the idea/ideal of the Romantic innocent child, and that this representation was reinforced by art that supplied a ‘visual fiction’ of childhood as innocence. Thus the meta-narrative of the Enlightenment aided by technology fore-grounded one definition of childhood and firmly placed it literally in the public eye. Prior to this childhood was (in the West) simply an imperfect adulthood, and adulthood was embraced when it was economically and biologically viable, which was between the ages of 7–12 (Heywood 2002). Stephanie Coontz (1992) notes that at the ‘age of consent’ in many states in nineteenth century America was nine or ten for girls (p. 184), and that while the nineteenth century middle class family was nurturing its young with violin lessons, poor urban children were collected by ‘child savers’ and sent to work in Midwestern farms (p. 132).

Clearly childhood is a contested and constructed space. Henry Giroux (1996) notes, “As a concept, youth represents an inescapable intersection of the personal, social, political, and pedagogical. Beneath the abstract codifying of youth around the discourses of law, medicine, psychology, employment, education, and marketing statistics, there is the lived experience of being young” (p. 3). No one was more adept and influential at defining, codifying and limiting the perimeters of youth in America than G. Stanley Hall in the early 1900s. Hall was influenced by the dominant theories of his time, namely the spill-over from evolution to other linear chronological models of human development. Early models of adolescence (including Hall’s) relied on anthropologically-borrowed notions, from Margaret Mead and others, of natural formal transitions from childhood to adulthood (Kett 2003). Originating in zoology, *recapitulation theory* connected early anthropology, biology, evolutionary and eventually childhood theories, and gave credence to the creation of a ‘scientific’ model of human growth and development. The idea was that human races developed from animal to civilization and human children followed this chronology. Adolescence by this discourse was understood as ‘less than’ in the same ways that the colonized childlike racial ‘other’ was less than.

Several theorists have critiqued this discourse and argue for rethinking childhood. Joe Kincheloe (2004) notes how children are often caught between overextended families and a media-saturated culture that leaves them truly alone and bored, powerless (in very real ways as the protections for children are constantly eroded)

and hopeless. At the same time children who have been informed by the media are considered overly worldly, negatively precocious and a threat to the social and moral order. Nancy Lesko (2001) places the notion of adolescences as 'less than' adulthood in an historical context by doing so argues against its veracity. Shirley Steinberg and Joe Kincheloe (2004) also argue that the context of childhood has changed, and this change must lead to a re-visioning of the child.

The traditional or 'natural childhood' is an idea predicated on developmental notions that exclude children from political involvement by deeming them incapable of understanding adult concerns. But we join those who argue that childhood is not static, rather it is as an ideological construct, that is rooted in multiple social, economic, global, cultural contexts. The meanings of childhood can and do change. Likewise 'youth,' has not been a unifying concept (race, class, gender and urban/rural and historical positionings having greatly influenced its conception). We argue that the experiences and perspectives of youth such as Dylan can help us reformulate ideas about youth and childhood in general. As young men and women like Dylan use the information available to them in the age of hyper-reality, they are able to be informed on politics in ways that have been inaccessible to previous generations. We argue that their voices demand not only serious consideration in the political sphere but also that as they politicize, they force us to rethink 'childhood' itself.

REFUSING A WORLD ALWAYS ALREADY THERE

We contend that a conception of children as 'unable to be involved' in society at large, and in politics in particular, silences the contributions that they can and do make, and relegates them to passive recipients of a world that has always already been there. This is dangerous mythology. We contend that it is important for all youth growing up in a society to understand how politics affects them. As youth are bombarded with advertising and seen simply as markets (Shor 2005), as they tangle in record numbers with drugs, crime, homelessness, pregnancy, AIDS, violence, fear, abuse, hopelessness, neglect, we contend that political involvement can support them in recognizing how politics shapes the way that people are able to live. When children are able to be politically involved, they can have an understanding of politics that goes beyond knowing what candidates are running for office, and in this understanding they can be supported to take agency and feel connected to others. Dylan argues,

sometimes when adults elect politicians, the children don't have a say, but the issues facing a government are issues that will directly impact the next generation. The officials who run a country and have influence in a society sometimes do not take youth into account when making their decisions, or if they do, the decisions still might not be in children's best interests. Although youth like me cannot vote yet, we can mobilize others to vote. We can educate ourselves, our friends, and our families, and we can attend protest rallies and let

our voices be heard with other like-minded people. We can boycott companies that are harming the environment or treating workers badly and be involved in local, national, and international political and human rights movements.

We bring critical perspectives to our work with children and adolescents, and these theoretical perspectives explore the ways in which political power works, and emphasize this as something that is both agreed to and resisted, and as something that can constrain as well as empower. The institution of school embodies a mechanism of social control, one that extends from the disciplinary power structure of the school itself, to the wider societal control over opportunities that are offered as available to young people. The increasing technicizing of public education is a form of power (McNeil 2009). We see becoming politically aware as a way for youth to resist these oppressive structures; a way for young people to become aware of their own positionings, as well as a possibility to perceive greater opportunities for themselves and others – in interpreting their own lived worlds, they can begin to see their interactions with others as agentic. As Dylan notes, political youth can boycott, organize and mobilize others, his actions challenge the idea that crossing into the official world of adulthood will magically confer agency on him and in the meantime he will have to simply be a recipient of the power wielded by others.

STEPPING IN AND STEPPING UP

Every generation hopes that the next generation coming up will solve the problems that the current generation has either created, or been unable to solve. As the world of young people today is increasingly connected in cyberspace, the significance of Dylan's texting on the night of the US presidential election becomes increasingly important. Youth like Dylan who are connected to information sources on formal and informal levels have the power to be politically informed and engaged in a multitude of societal issues. Their political engagement can begin in their homes, and extend to their schools, their communities, and even the nation.

Politically engaged youth can speak out against, and work together to change, things that are unfair, unjust, and wrong. We believe that youth who are joining their families to protest on Wall Street and across America and who are visibly standing up for justice are not passive bystanders roped into action by manipulative parents. They are able to articulate injustice and understand the need for action. As these children speak out and mobilize others, they can work to explore creative solutions to difficult problems. Our experiences have led us to believe that many youth have a predisposition to critical political thought. They appear absolutely sure that they would run the world (and school) so much better! To encourage youth to politics is to encourage an awareness that things don't just happen to them or us, they have reasons, they have logic, and this logic can be challenged, fought and altered. The world is not immutable, it can be otherwise. Although schools constantly tell young people this, often through the use of inspirational platitudes (ad nauseam), we believe

that it is only when youth themselves are politically active that they can begin to envision how the world we share could be better. We know this is possible, we know this is happening. We are excited by the prospect of a future that acknowledges youth as full participants in a democracy that is inclusive.

NOTE

- ¹ We note here that while the voting age in many countries is 18, there was an initiative presented to the Council of Europe in 2009 to change the voting age in all European elections to 16. Resolution 1826 was passed in 2011, which focuses on examining a voting age of 16 in European countries, and following which some countries permit 16 year olds to vote in local elections. For more information: assembly.coe.int/Mainf.asp?link=/Documents/AdoptedText/ta11/ERES1826.htm

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Dylan Siry is a teenager whose interest in politics began in his early adolescence. He has attended anti-war protests and rallies, and campaigned for various political movements. In his last year of high school in Luxembourg, he analyzes world politics, and reads about political history. He hopes to one day be involved in government affairs.