

Veena Kapur · Sudipta Ghose *Editors*

Dynamic Learning Spaces in Education

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This book is dedicated to all the teacher educators and practitioners committed to the process and transaction of education.

Preface

We wrote this book to create an appropriate forum for presenting and analyzing the contemporary educational space, positing theoretical and practical issues that temper educational discourse. Education today is experiencing a major paradigm shift, necessitating the reorganization of systems and alignment with emerging needs and trends. The process of teaching learning, mobility of learners across learning spaces, the democratization of knowledge and the consequent change in the role of the teacher bring to the fore the urgent need to revisit the goal of education itself, reviewing it under a critical lens. The need to critique is inherent in the process of realignment, for it brings out, in stark relief, the category of learners and areas of education that are on the lowest rung of development. In this context, the book brings to the fore some important issues that need to be addressed for establishing relevant and meaningful education: the digital learning culture; new age classrooms and teaching strategies; social justice and inclusion; and voices from the field.

The book has been divided into five parts and chapters have been thematically placed in each part. The authors are from varied backgrounds and from various countries. This is the strength of the book, as each author brings to the particular theme a unique perspective that is germane to their country. Since they are teacher educators or practising school teachers, their insights are also those of reflective practitioners. This gives significant depth to their writing.

This book is written for the perusal of teacher educators, practising teachers and educationists. The areas of education that are covered in the book help build an in-depth perspective of education while forging linkages between theory with praxis.

Many people have helped and encouraged us during the compilation and writing of this book. We offer them our heartfelt thanks.

In particular, we would like to acknowledge Gautam Kapur and Nidhi Seth, who in their personal capacity provided informed input. We owe a special debt of gratitude to both of them, for taking out time, and spending uncountable hours to

support and inspire in this endeavour. Their insightful questions challenged and broadened our thinking and imbued our writing. We would especially like to mention and express our heartfelt thanks to Dr. Toolika Wadhwa, for the much needed input and timely help given by her.

Finally, we want to express our sincere appreciation to Shinjini Chatterjee and Priya Vyas, at Springer, for their support, timely advice, and for seeing this project to its completion.

New Delhi, India

Veena Kapur
Sudipta Ghose

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Contributors

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Chapter 1

Introduction: Dynamic Learning Spaces in Education



Veena Kapur

The introduction to this book is divided into two sections. The first section posits the main theme of the book and its objectives, discussing the far reaching impact of globalization. The editors will proceed to elaborate and analyze the challenges and the need for change in the present day educational space, while trying to address the issues of theoretical and practical import. This section is intended to set the tone of the book. In the second section, there will be a discussion of the book, its division into various sections and the chapters each section includes.

Understanding Globalization

The world as we see it today, has experienced a great transformation brought on by Globalization, an ongoing process that is linking people, neighbourhoods, cities, and countries. Countries have become interconnected and interdependent for fulfilling their needs, the lives of its people are becoming inextricably intertwined with people in other parts of the world, through things as mundane as the food we eat, the information we get, and the ideas we hold, thereby bringing the world so much closer. Not being a new process, globalization has accelerated rapidly since World War Two, impacting people, environments, cultures, economic development, and human well-being (Ross and Gibson 2007). The resultant tumultuous changes have led to the opening of trade markets, outsourcing of manpower, and have led to technology making economic life more competitive and demanding, and human expertise development more significant as well as complex. It is the educated workforce equipped with modern skills that can compete and benefit from utilizing the opportunities created by this transformative process (Kumar and Parveen 2013).

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Though the effect of globalization has been far reaching, many people are missing out on its beneficial impact. This dimension of the global process is a harsh reality that needs to be dealt with, since societies are on different points on the development continuum. On the one hand, there are societies tuned to goals of sustainable development, steeped in ideals of social justice and harmony; on the other hand, there are social orders that are plunged into despair because of hunger, illiteracy, and social ills, like child labour and violence against marginalized sections, based on gender, age, caste or class.

The phenomenon of globalization is the result of world-wide integration of economies and societies through cross-cultural flows of information, ideas, technologies, goods, services, capital, finance, and people. Initially this process was related to the areas of economics and finance, but gradually encompassed all sectors of human activity, including education, health and the like (Hallak 1999; Kumar and Parveen 2013). Researchers and writers have comprehensively documented the impact of globalization on the world economy. Friedman (2005), in his book *The World is Flat* describes the rapidly changing global landscape as a new, interconnected world, in which information, ideas, money, people can move around faster than ever before. In fact, he views the world as a “level playing field” in terms of commerce, wherein all competitors have an equal opportunity to express themselves. Within this context, a perpetual shift is required for countries, companies, and individuals to remain competitive in a global economy in which historical and geographical divisions are increasingly becoming irrelevant. Friedman further emphasizes the inevitability of a rapid change of pace, and the extent to which the emerging abilities of individuals and developing countries are creating pressures on businesses and developing countries. Bhagwati (2007), a renowned Indian economist, defends the globalization wave as a positive force for social good in the world, leading to greater general prosperity, increase of literacy, and enhancement of women’s conditions. It is, in fact, a force that facilitates the advancement of the social agenda of countries. Bhagwati suggests that, in order to make this transformation more effective, it is essential to ensure effective governance. Governments only need to build corresponding institutions and policy frameworks that reduce the likelihood of downsides thereby helping countries cope with them.

Change and Challenges

Education is at the core of this constantly changing environment, opening up a plethora of opportunities, as well as challenges, that require the development of new skills and competencies. There has been significant progress in the area of communication and technologies facilitating the emergence of learning societies. The nature of work has transformed, relying more on flexibility and mobility, communication skills and teamwork. The widespread shift in the global order necessitates a need to address the issues of access, efficiency, equality, inclusion, quality, and the relevance of education. Pedagogical methods today emphasize the need for

fostering critical thinking, creativity, and innovation. Exploration, experimentation, and the skill to push the boundaries of knowledge for more effective learning, are characteristics of the members of this society as it encourages them to work in teams, and develop skills through group dynamics, debate, persuasion, organization, and leadership (Cogburn 2008). These changes pose tremendous challenges to educators and therefore it's not surprising that stakeholders in education are experiencing a rising concern over the status of education and its future in such a society. There is a deep felt need to revisit its basic tenets and restructure education so as to make it more responsive to the emerging needs and trends of an ever changing society. It is essential that educationists ensure that the education system of their countries evolve congruently with the transitions. To be hemmed in by the past and its glorious traditions will not facilitate the quest for progress. India is a striking example of a country that has one foot in the past while moving forward. Schools in India need to adopt a new image, as the old will no longer be relevant and certainly not attractive to the new age learner. "The schools have not gotten worse, they have simply not changed for the better", a statement that is more applicable to the educational landscape in the Indian subcontinent than anywhere else in the world today (Gerstner et al. 1994, as cited in Cranston 1998).

Educationists are focussed on how to prepare teachers and learners alike for continuous change, improvement while ensuring equity, quality, and accreditation in education models. They are today confronted with the challenge of transitioning to higher standards and gearing education towards each learner's unique needs, interests, passions, and competencies. They are also faced with the dilemma of what constitutes meaningful education for the learner, as well as the future workforce, in terms of knowledge skills, social and emotional intelligence to ensure future success. This requires bridging formal and informal learning, incorporating learner portfolios, and preparing for higher education and future careers while earning a worthwhile wage in a global economy. Educational processes need to be designed around the learner, offering stronger student, and educator, supports for attaining success.

Bill Daggett, in the 22nd Annual Model Schools Conference (2014), has pointed to the following challenges that Education is facing:

1. Impact of Digital Functioning on the Classroom Practices and the Teacher
2. Heightened Demand for Career Readiness
3. Increased stress on Application-based Learning
4. Incorporating Principles of Social Justice, Democracy, Human Rights and Inclusion.

To these the editors have added an important skill: 'Developing Personal and Life Skills', that will be discussed along with career readiness and application based learning.

Impact of Digital Functioning on the Classroom Practices and the Teacher

At the heart of education are the learner and the teacher. Let us try and understand the learner of today. The International Education Advisory Board's (IEAB) 'Learning in the 21st Century: Teaching Today's Students on their Terms'¹ has highlighted the characteristics of learners in the world of today. The twenty-first century learners are technologically driven. Information and Communication Technologies (ICT) have been a part of their life and they are comfortable using it to collaborate, and solve problems. They can perform as many, if not more, functions with a mobile phone, than with a traditional computer. These learners think differently. For example, unlike previous generations, they do not marvel at technology, nor try and understand how it works. They are more focussed on using it to find the information they need. They don't like to be bound by traditional schedules and prefer to use technology to study at any time of the day or night, to complete tasks in new and creative ways. The White Paper by IEAB (2008) also underlines that fact that learners today are group-oriented and social, they network socially and collaborate, and share what they learn with others. Moreover, they are inclusive in their approach to life and have learnt to be tolerant of all races, religions, and sexual orientation. Most importantly, they value time off from work because they view life as uncertain and are therefore determined to manage time differently from their parents' generation. Moreover, having grown up in the best economic times they believe in living luxuriously and on their own terms. On the other hand, twenty-first century teachers may resist learning about new technology and can be reluctant to adopt it too quickly. At times they are intimidated by their own students' knowledge and understanding of technology. New technology, which requires teachers to take on the role of facilitator rather than the traditional authoritative one of the transmitter of knowledge, takes them out of their comfort zones.

Technology not only provides an extraordinary enabling potential to teachers and learners in general, but also to those who are differently abled and those who are growing up in suburban areas. In fact, it opens up possibilities of inclusion in education, particularly among those who have traditionally been shut out, thus more fully developing their cognitive, emotional, and social potential (Ramchand and Dummugudem 2014). Schools and colleges in the west have responded to the changes and challenges, but the pace needs to increase exponentially, as advances in technology gather momentum (Drucker 1995).

The theoretical framework of education and its dimensions have been informed by the work of psychologists such as Piaget (Ginsburg and Oppen 1988) and

¹https://www.certipoint.com/Portal/Common/DocumentLibrary/IEAB_Whitepaper040808.pdf.

Vygotsky (1930-1934/1978) in the beginning of the twentieth century. Their research has impacted the theories of learning: from passive to active learning, from drills and practice that are the cornerstone of the behaviourist school, to the constructivist development of learning, and a more learner-centred approach in the classroom. The focus is now more on fostering the capacity of each learner to build his/her own model of learning, using the mediation of the teachers, a didactic environment, as well as both school and out of school resources (Hallak 1999). Technology has enabled the winds of change to reach the remotest corners of the world, influencing educationists to revisit teaching and learning with a fresher perspective, negotiating the changing situational matrix. As a result, a wide spectrum of new teaching strategies is in evidence today. Moreover, our very perception of knowledge and how it is to be transmitted is now viewed differently. We are no longer limited to a linear perception of knowledge, but have acquired a constructivist view that is based on the premise that knowledge is constructed through experience, bridging the gap between old knowledge and new learning (Charles, this volume).

The education systems of the world today present a paradox. In the rich, industrialized countries of the west, like the United States of America, major reforms in education have been initiated, helping bridge the digital divide. Internet access, smart boards, tablets, and the like, are part of the classroom changing its very profile. Tablets have been integrated into classroom learning (Coley et al. 1997). On the other hand, the Indian Subcontinent presents a diametrically opposite picture of a rocky educational terrain. In this context, Ashendens' (1994) statement is succinct in its description, that, if the classroom represents the learner's workplace, it is still in the mould of a nineteenth century model, "much more humane and interesting" but recognizably the same place. Indian schools present a change in outward strategy but the core ideologies are still traditional in transaction, continuing to promote learning in a formal, structured, environment, with teachers transmitting knowledge to passive learners. The classroom is dominated by the chalk, blackboard, and textbooks, while pencils and pens still play a prominent role in school learning, and the school bag too, is a part of a child's school uniform. The traditional approach is too rigid, needing to be replaced with more dynamic and interactive strategies, to make the classroom more relevant to the twenty-first century learner and the world they inhabit, thus becoming less of an anomaly as it appears now. Private schools in India are representative of the desired change, but they cater to the needs of a minority of the Indian populace, being few in number and having a prohibitively high fee structure.

In the new millennium, learning no longer revolves around the ability to just read, write, and perform arithmetic, new technologies such as artificial intelligence, robotics, nanotechnology, and 3D printing, have had a resounding impact on the evolution of education and the skills required to meet the demands of the future. The World Economic Forum 2016 report ('The Future of Jobs'), estimates that 5 million jobs will be lost to automation by 2020, while some of the strongest job

growth categories, as defined by the US Bureau of Labor Statistics,² will be those based on the use of technology and computational thinking skills by 2025. It is estimated that new technologies will have created 2.1 million new jobs by 2024 that require knowledge in computing and skills in mathematics, architecture, and engineering (Moran 2016). With the arrival of immersive technology and its growing prominence, IT and programming will be soon become an integral part of the school curriculum. Innovation, problem solving, coding, and creativity underpin the new focus of education, as opposed to unilateral focus on project-based learning (Sriram, this volume). As the dynamics of education continue to evolve, teachers are empowered with the ability to change the model of learning, making it intensely interactive.

Comparable to the transition to print literacy and book culture in the past, which had initiated a dramatic transformation of education (Kellner 2011), technology has initiated dramatic changes in the world education systems though more dynamic in proportion and depth. The urban areas of India provide an excellent opportunity for digitization of educational services. Unfortunately, it is private schools and private colleges that have the large financial funding that is essential for implementing and running a digitized educational institution (as reported by Frost and Sullivan 2016). A large number of parents try and enrol their children in these educational institutions. Another interesting trend that can be observed in South East Asia and the Indian subcontinent, is the rise in income and spending power of the middle class (Barber and Mourshed 2007). This class of society is now taking a keen interest in their children's education, and are keen that their children receive education that is viable in the changing world order, and are enthusiastic in spending on digitized education, facilitating the spread of technology across cities and mofussil towns.³ The Indian Government is planning to provide the students of the national government school system—the Kendriya Vidyalayas (wherein admission is open to children of Central Government employees) with iPads and laptops.⁴ This initiative represents a step towards enabling interactive teaching through the use of technology in education.

²U.S. Bureau of Labor Statistics, 'Projections of Occupational Employment, 2016–26,' *Career Outlook*, October 2017. https://www.bls.gov/careeroutlook/2017/article/occupational-projections-charts.htm?view_full.

³Akshay Arora, 'Is Education System in Tier II and Tier III Cities Prepared to go Digital?' *FranchiseIndia.com*, 18 March 2017, <https://www.franchiseindia.com/education/Is-education-system-in-tier-II-and-III-cities-prepared-to-go-digital.9177>; Aditya Malik, 'The Paradigm Shift in Technology Enabled Education,' *The Higher Education Review*, 30 June 2017. <https://www.thehighereducationreview.com/opinion/in-my-view/the-paradigm-shift-in-technology-enabled-education-fid-56.html>.

⁴M. P. Gohain, 'KV's get ready for new learning curve with video games, tablets.' *The Times of India*, 14 July 2017, <https://timesofindia.indiatimes.com/city/delhi/kvs-get-read-for-new-learning-curve-with-video-games-tabletshackathons/articleshow/59588257.cms>.

A compelling reason for embracing digitization is that it exponentially improves access to education, especially in economies where a large population is accompanied by scarcity of resources. Around the world, according to UNESCO (2005), a vast number of children of primary school-going age are not going to school. This is in addition to a multitude of lower secondary school-age children and even adults. The majority of these are in Asia and sub-Saharan Africa. Digitization of education will help address the problem of access to education—impacted by affordability, distance, and discrimination—by enabling the mass delivery of quality education across geographical boundaries, making it accessible not only to a few in the cities but to the multitudes living in the villages and the peripheral areas where quality education is unheard of. To attain this goal, it is important that governments of these nations make concerted efforts to make ICT a major part of their developmental plans, prioritizing investments in ICT as part of their national planning. For example, the government of Ethiopia has made investment in ICT a priority, as a part of its five year Growth and Transformational Plan. In the Indian subcontinent, the ‘Information and Communication Technology in Schools’ scheme was launched in December 2004 and became a part of RMSA (Rashtriya Madhyamik Shiksha Abhiyan). It was further revised, in 2010, to provide opportunities to secondary stage students to mainly build their capacity on ICT skills and make them learn through computer aided learning process.⁵ The scheme was supposed to be a catalyst to bridge the digital divide between students of various socioeconomic and geographical barriers. The major component of this scheme was a focus on establishing Smart Schools, which would be technology demonstrators. Second, the scheme aimed at creating partnerships with State Governments and Union Territories providing computer aided education to Secondary, Senior Secondary, Government and Government-aided schools. Third, the scheme envisaged teacher related interventions, such as provision for engagement of an exclusive teacher and capacity enhancement of all teachers in ICT. The fourth one relates to creating e-content, mainly through Central Institutes of Education Technologies, and State institutes of technology, regional institutes of Education, as well as outsourcing. So far, 87033 government and government aided secondary schools have been approved for coverage under ICT in Schools Scheme (Planning Commission 2011).

These government initiatives are laudable but may take time to realize in emerging economies like India. What has been realized is broadband penetration across the vast terrains of these nations, developing a strong communication infrastructure that makes e-learning a reality. As mobile devices become more ubiquitous, mobile learning for learners and adults will support anywhere and anytime access to learning opportunities and open multiple pathways to learning (Traxler 2010). Mobile learning is growing faster than ever even globally. Consequently, there is hope that learners in the emerging economies will be able to

⁵Ministry of Human Resources and Development, Government of India. ‘Information and Communication Technology (ICT)’. http://mhrd.gov.in/ict_overview.

trade their textbooks for affordable smartphones, and perhaps tablets, packed with an entire curriculum (Valk et al. 2010). The reason is that the instructional design of mobile learning is more modular, contextual and bite sized, to provide greater flexibility and clearer outcomes (Bachmair and Prachler 2015). In South Africa, mobile handset manufacturer Nokia had capitalized on the popularity of the instant messaging social network platform Mxit to launch MoMath, a mathematics teaching tool aimed at the youth.⁶ Kam et al. (2009), in a study in North India, found that academically strong students benefited from a self-paced self-directed mobile learning approach. The mobile learning approach is at a very nascent stage in India. Yet it is an area that can be plumbed to its depth for better results. However, the world is changing and advancing at a faster rate than the reforms any school system can make or a researcher can suggest. Therefore, stakeholders in education need to explore and create a culture that supports change and its implementation.

The dismal economic environment in India has compelled teachers to find alternatives or adapt themselves to the situation at hand (Seth and Kapur, in this volume). Teachers need be trained in an effective use of technology in the classroom (Villa and Kapur, this volume) and prepared with computing skills to seamlessly integrate technology into their classrooms. Even the existing teachers in India are not exempt from learning these skills. In this context, staff development should be a priority, but is difficult because members of the staff are at varied levels of knowledge regarding technology. Moreover, training and certification of computing skills are critical to success in the classroom. Equipment means nothing unless teachers and other ICT professionals within school districts can use them productively to supplement teaching. Exposure to computers in the classroom or at home and use of mobile technology does not always ensure understanding or efficient use of ICT. Core digital literacy needs to be taught to learners and teachers alike (Villa et al., this volume). Government legislations around the world, especially in the USA,⁷ aim to bridge the Digital divide by improving the academic achievement and digital literacy of all students. On the contrary, in India, despite Government legislations, the exploding population, accompanied by limited funding for educational development has ensured that the education sector has to contend with rising education costs and diminishing funding. Such untoward circumstances are bound to adversely impact visions of implementing digital functionality in classrooms.

Active participation in this new landscape necessitates that educational institutions are equipped with the relevant tools for students and teachers developing the skills needed in the new global economy and culture. As a result, the current technological revolution necessitates a major restructuring of education, with new

⁶A. Benavot, 'Can Mobile Learning Bridge the Digital Divide and Learning Gap?' Huffington Post, 8 March 2017, http://www.huffingtonpost.co.uk/aaron-benavot/mobile-learning_b_9406694.html.

⁷Elementary and Secondary Education Act of 1965, 20 U.S.C. 6301 note, Amended P. L. 114-95. <https://www2.ed.gov/documents/essa-act-of-1965.pdf>.

curricula and pedagogy. Consequently, the teacher's role has been transformed, from being a transmitter of knowledge to that of a facilitator (Sriram et al., this volume), while becoming a reflective practitioner (Yadav et al., this volume). The shift of the educator's role in new learning models requires shifts in their professional development models as well. The old models of professional development, of attending seminars selected by administrators on specific days, is fast becoming outdated. Teachers need to design their own professional development in real time and micro-credentialing their informal and informal learning, very much akin to personalized learning models of their own students. It is evident that education needs to be completely transformed in keeping with the monumental changes that the world is experiencing. Mere lip service will not do the job. As Patel (1976) has said "Not a simple Jab of the knife/Will do it ...".

Caldwell (1996), proposes a new "Gestalt" for Education where there will "be no limit to the value that can be added to student learning". Therefore, there is an urgent need for a new look at teaching strategies that incorporate collaboration⁸ and cooperative learning (Ahuja and Ghai, this volume). Data regarding learners has to be used to improve and adjust instruction to the needs of each learner. Summative assessment has to give way to formative assessment and errors have to be viewed differently (Ahuja, this volume). Using formative assessments to customise instruction is a requirement that has to be met in our classrooms. The human capital has to be developed and not wasted through mass instruction (Ghose, this volume). Instructional programmes have to be reorganized to give learners maximum opportunities to apply their knowledge and skills across disciplines (Sriram, this volume). Moreover, classrooms need to be reconfigured to focus on learning rather than teaching (Sehgal et al., this volume). Classroom learning can be organized in the form of project-based and collaborative learning (Sriram and Ghai, this volume). Teachers need to be involved in creating a new-age classroom so as to align learning to the demands of the learner and society (Villa et al., this volume). School classrooms in India are rarely designed for active learning and generally work on the principle of knowledge transmission in a top down approach (Sriram and Wadhwa, this volume). Ignoring the efficacy of project-based learning, which supports active participation on part of the learner and teacher, the Indian classroom is caught in a time-warp (Wadhwa, this volume). The sub-continent needs to focus on a greater understanding of specifications of application-based instruction and learner engagement (Ghai and Sriram, this volume).

Stakeholders in education today are deliberating on how to transform formal education to meet the nuanced societal demands. Life Skills is one such strategy that needs to be incorporated in formal education, to enhance its relevance to life for the learner. Life Skills have been defined by WHO as "the abilities for adaptive and positive behaviour that enable individuals to deal effectively with demands and challenges of everyday life". Incorporating life skills is a step in the direction of

⁸Carl D. Perkins Career and Technical Education Improvement Act of 2006, 20 U.S.C. 2301 et seq. <https://www.gpo.gov/fdsys/pkg/BILLS-109s250enr/pdf/BILLS-109s250enr.pdf>.

bridging the gap between organized education and real life. Life Skills address a balance of three areas—knowledge, attitude and skills—helping in development of social competence and problem-solving skills as well as in making informed decisions, communicating effectively, collaborating, developing coping skills and positive self-esteem. These skills are critical in today’s workplace (Chaurasiya, this volume). Schools provide learners with a platform where teachers and specialists are available to them, for guidance and counselling on how to resolve their queries and doubts, and find different sources that can give them the right answers. The teacher’s role evolves into that of a facilitator, one who can teach the student to explore, channelize the knowledge they have found, and help them apply that in real life situations. They can ask learners to observe things around them and identify areas that trouble them, social issues that are problematic, and put it in on the classroom discussion forum. Through participation in discussions, and receiving constructive feedback, the learner learns to put forward views, develop critical thinking and communication skills, which are essential for every individual to possess to live effectively. Chaurasiya (this volume) analyzes the personal skills that Language and literacy education can impart to learners so that they can lead more productive lives, adding value to the world they inhabit.

Heightened Demand for Application-Based Learning and Career Readiness

The idea of linking learning with academics is not a novel concept. Dewey (1998) had advocated education through experience at the beginning of the last century, as had Mahatma Gandhi in his scheme on Basic Education. Research indicates that students who engage in experiences that connect school learning to the real world are more likely to stay in school. Furthermore, such experiences increase the chances that students will be both college- and career-ready (Rogers-Chapman and Darling-Hammond 2013). Work-based learning programmes are quite prevalent in The United States Of America, though India can boast of only a few isolated examples that are designed for it.⁹ Project based learning as an education strategy is being deliberated over by educationists in India (Sriram, this volume). It allows for development of both cognitive and social skills.

Reinvention of schooling, and the craft of teaching, cannot be placed on the back burner in a rapidly changing world, where knowledge is constructed from many different sources and perspectives (Daggett 2014). A search for less-traditional methods of teaching, where the teacher facilitates collaborative student learning through a wide variety of media-rich, interactive, and authentic learning

⁹The Borgen Project. <https://borgenproject.org>.

experiences, can benefit the learner and teacher alike. The traditional roles for teachers operating in an environment of content-focussed curricula with them as controllers of information, as discussed, is already obsolete (Sriram et al., this volume). Learners, in India too, are no longer desirous of an education that removes them from the real world. They seek to get ready for life (Chaurasiya, this volume), desirous of a deep insightful relationship between the theoretical knowledge they are acquiring and its practical implications (Rajput and Ghai, this volume). Hence, today they seek interface with the real world. Vacations are meant for enhancing their skills and employability. From undertaking socially useful productive work in the school time, learners seek internships in institutions and NGO's during vacations. They are desirous of gaining insights into the world of work, and add to their job skills, during the course of study. These forays add to their understanding of the world, and in turn to their career readiness. They need education that brings them closer to the world they inhabit (Sriram, this volume) so learning needs to be applied and prepare them for the world of work.

Career-readiness and employability skills are a critical part of education. Employers are seeking employees with skills that prepare them for a career and employability, as well as soft and life skills (Ibarraran et al. 2014). Leaving out soft skills puts learners at a disadvantage in the workplace; technical skills alone will not be enough (Bridgstock 2009). Soft and life skills have been termed as the bedside manner of the workplace, and form the backbone of every organization and successful employee (Chaurasiya, this volume). The emerging paradigm of education is becoming increasingly aligned towards systemic changes and continuous improvement at all levels of education, in terms of a richer curriculum, sophisticated teaching strategies, and more robust assessment systems.

Learners in the twenty-first century are not merely seekers of knowledge for its own sake. In keeping with the demands of the rapidly changing world around them they need to seek knowledge which hones their employability is what should be sought through education. The learner desires, and therefore seeks, an education that helps create a mind-set and skills that aligns them to the world in which they live. Learners need to be prepared for lifelong learning or they may find themselves on the wrong end of the learning continuum while facing diminishing economic opportunity and well-being. It is imperative that education helps foster thinking skills that would ensure success in today's world (Ghose, this volume). Moreover, they need to acquire the knowledge, skills, and dispositions needed to foster critical and creative thinking, problem solving, collaboration, multiple modes of communication, uses of new technologies, the capacity to learn, and developing a mind-set that supports resilience, and resourcefulness.

It is evident that all learning today does not take place within the four walls of schools (Bose, this volume). An immense amount of it is constructed through non-standardized sources. Learners, through television, internet, and opportunities for interacting in diverse learning communities via social media, are learning effectively, well beyond the traditional confines of the classrooms, acquiring skills

and achievements that are essential today. It is imperative to understand that even the four walls of the classroom cannot be ignored, for the classroom is a learning space that has to be moulded keeping in mind the learner (Wadhwa and Bose, this volume). Unconventional procedures of learning are fostering out of the box thinking. In this context, the strategy of content transaction needs to be imbued with fresh life, and geared towards the demands of an ever-changing world (Bridgstock 2009).

Incorporating Social Justice, Democracy, Human Rights and the Principle of Inclusion

Dewey's classic work, *Democracy and Education*, celebrated its centennial in 2016. It gave an opportunity of reminding scholars about Dewey's love of democracy, the field of education, and, by inference, to human rights and inclusive education. Dewey had argued succinctly that social revolution can start at the school stage and that through democratic education, the improvement of society could be undertaken. Moreover, it was important to accept that teachers couldn't instil ideas of democracy when the world around was marked by discriminatory practices, as well as social and political oppression (Dewey, cited in Adami 2016). This notion of education, as a mode of visionary teaching to create a better democratic society, was at the heart of Dewey's writings. Krapf et al. (2010), base their understanding of human rights education on Dewey's notion of teaching, which perceives it as a mode to mould citizens who then would be involved in changing society. Krapf et al. (2010) further stress that to educate about human rights is a way to engage in democratic praxis. Educationists and teachers should listen to and facilitate student initiatives in creating forums within the school to practice democratic participation while being an active participant in societal actions. Classroom pedagogies in schools need to be designed on the basis of the human rights perspective (Kumar, this volume) facilitating learners' understanding about human rights and how to implement this perspective in their lives and interactions. This necessitates that teacher education programmes should be centred on this perspective.

The world today is becoming more and more inclusive, as Ashby (2012) noted, and that the separation between general and special education is neither natural nor inevitable. Traditional teacher-education programmes do not prepare general education teachers to reach out to the diverse students that are part of their classrooms. In fact, this perpetuates a dual education track mind-set in schooling. A paradigm shift in educational institutions is critical for ushering in true social justice and education for all students. If teacher education programmes could effectively equip future teachers to recognise the characteristics of exceptionalities, differentiate curricula for diverse learners, and effectively implement a positive support system then a dual-track educational system will be eliminated (Sandhu, this volume).

Instead, a truly democratic education system based on the foundations of social justice, by allowing equal opportunities to students, needs to gain prevalence. The principles of social justice and inclusion need to be part of the social matrix, ensuring that the teacher and learner alike need to become more informed, critical, and engaged citizens. They should also reflect upon ethical issues that are inextricably involved with the policy of inclusion. Equality is not synonymous with sameness. In special education, all aspects of education and access are framed with explicit understanding that what is fair is not necessarily equal (Stone et al. 2016). Even in an age of increased awareness of civil rights, we often confuse equality with equity. Garrison (2012) posited, “equality is the antithesis of sameness...”. He further states that democratic moral equality celebrates qualitative individuality. Kumar analyzes ethical questions, while discussing the principle of inclusion in schools (in this volume).

Globalization has initiated important demographic changes the world over. Emigration patterns have brought changes in the demographic profile of countries and they are more racially and ethnically diverse, more multicultural, than ever. Education is, therefore, faced with the challenge of providing people from diverse races, classes, and backgrounds with the essential tools and competencies, which will facilitate their success and participation in the world of today (Raaj, this volume). Moreover, with these factors at work, there is also the growing inequality between rich and poor, and the proliferation of cultural conflict between the normal and the gifted (Sandhu, this volume). These forces at work are taxing youth, families, and education systems worldwide to become more and more tuned to the changes that have been set in motion. All agents of society are predicated on the need to impart values, morals, skills, and competencies to the next generation. Thus, the teachers’ scope is correspondingly enhanced and widened, so as to cultivate varied competencies and to take up these challenges (Sandhu, this volume).

The Book

The main thesis of this book is to study educational reform in the wake of globalization, in order to develop an understanding of how to transform the traditional classroom and its pedagogical practices to support the demands of a dynamic society. The change has impacted education systems in complex and conflicting ways, with an increased emphasis on preparing global citizens who are ready to face the highly competitive world. The basic objective of education has always been to enable children to develop their potential, be gainfully employed and, most importantly, pursue a meaningful life. Globalization has put an added pressure on education systems the world over. It is their role to nurture the future citizens in meeting challenges that life presents. As in other parts of the world, globalization has influenced Indian society also. The changes necessitate that schools are configured to the varying needs of the individual learners and the demands of society. The diversity of India’s population and their needs compounds the problems the country faces today.

In the book, an attempt has been made to incorporate chapters with themes which examine new pedagogical practices and how they reconstruct learning spaces while understanding sources of learning that will become ubiquitous to the lives of the present day learners. Inclusion, reflection, and project-based learning are all tenets of this process of change in education that are issues dealt in the book. More importantly, to see the other side of the picture, cases from the field need to be analyzed. In this regard, the book includes a section on reflections of practicing teachers. This section helps in bringing out the connection between theory and praxis, and indicating in which direction we are moving and how to come to terms with it.

Three chapters in the book are authored by teachers/teacher educators from United States of America, Great Britain, and Canada. The varying perspectives from across the globe posit that issues germane to education recur across nations, the variations are a result of each nation's stage on the continuum of development. However, cases from India highlight that, while the nation is contending with educational issues of providing quality education to millions of school going children, it is also grappling with the problem of a poor nation which has a vast population. The changes across the world continue to challenge established social institutions, cultural norms, and behaviours that are prevalent in the country and are deeply entrenched in the Indian mind-set.

This book is divided into five sections, each section has a separate theme. The first part, 'The Digital Learning Culture: Potential and Possibilities', is related to digitization and teacher educators, and all the three chapters are focused on the interface of technology with the teacher intern, and in that context with the teacher educator, and, ultimately, with the reorganization of teacher-education programmes.

The second part, 'The New Age Classroom and its Teaching Strategies', has eight chapters. Each of the chapters elaborates on different pedagogies, ranging from Project Based Learning (PBL), Pedagogical Content Knowledge (PCK), Life Skills, reflective practices to the reflective analysis of school space and its role in creating positive learner identity. The chapters included here focus on developing insights into the classroom of today and how to transact learning is in this dynamic context.

'Social Justice and Inclusive Practices' is the third part of this book. It has four chapters, encompassing subjects ranging from disparities in access to education giftedness, giftedness, human rights, and multilingualism. The chapter on pedagogy and the human rights perspective is included in this section rather than the previous one is because the author is attempting to study the violation of human rights in classroom practices. The *raison d'être* of this section is to explore the diversity of the social matrix, post globalization, and how the principles of social justice and democracy compel stakeholders in education to rethink educational policies.

The last part, 'Voices From the Field', focuses on the reflections of practitioners and their experiences in the field of education. There are six chapters in this part. The areas covered in this section range from reflections on social constructivism, the influence of government legislations on the classroom, a practitioner's understanding of the reflective process, technology in the classroom, perceptions of

childhood and issues related to inclusion. Kumar's chapter on the Ethics of Inclusion is included in this section rather than the section on 'Social Justice and Inclusive Practices'. The rationale for this is that Kumar reflects on her experiences in the context of Special Educational Needs (SEN), recounting and analysing her personal interactions and views from the field. The chapter on reflection included here, again is the voice of a practitioner sharing her perception and experiences. This section elaborates through each chapter, the educational theories, and policies bringing out, in stark relief, the relationship between them and their transaction in praxis.

It needs to be pointed out, at this point, that the diversity of themes makes it difficult to discuss the methodology of each chapter. It suffices to say that, though some of authors use the methodology, survey is not the *raison de'être* any of the chapters. Let's take an overview of the parts.

The Digital Learning Culture: Potential and Possibilities

There has been a major shift in the teaching–learning paradigm, with learning theories moving away from the transmission paradigm to the constructivist paradigm stressing that learners construct knowledge by understanding new information, building on their current understanding. The transformation upholds the view that learning is an active process, based on the learner's current understanding and the construction of knowledge by assimilating new information to the old.

The fundamental unit of learning has been the 'traditional classroom'. With the emergence of technology and the rise of global connectivity there has been a major shift in how people learn, where they learn, leveraging newer avenues and resources of learning thereby, transforming the concept of learning space (Jakes 2016). It is now possible to augment teaching and learning with diverse materials that can be brought to the classroom. The notion of the classroom has both expanded and evolved, initiating interest in new pedagogical approaches. Technology has helped develop new and more effective pedagogies enhancing functionality of the classroom. An interesting innovative practice is the incorporation of video conferencing as a part of classroom pedagogy, when experts from remote lands can become part of classroom discussions. Role play and panel discussions can be recorded and used for further study. Wireless networking and numerous digital devices have made learning flexible, emancipating it from the bounds of time and space. These changes make it amply clear that the term 'classroom', at least in the traditional sense, can no longer define the learning place.

Re-crafting the traditional classroom into a contemporary learning space, requires an understanding of the principle of teaching learning that is at its foundation. The classroom needs to be dynamic, flexible in order to support the forever-changing notion of education, while remaining interconnected with digital spaces that support contemporary learning experiences. Banyard and Underwood (2008) have defined the four key spaces for learning: personal learning space, teaching space, school space, and living space. These learning spaces comprise the

sum total of the formal and informal learning of the learner. Schools must negotiate and find value in the social spaces and online communities where learners are members. An admixture of the two spaces can support interesting learning connections (Jakes 2016). Technology and innovation have brought tremendous change to the way the students learn. While, for previous generations, IT was an exotic optional tool, for the present generation, IT is essential; an entire generation of learners have grown up using it. Its 24 × 7 availability, and its increasing value as a communication tool, has made it an integral part of their lives and mind-sets, compelling the term ‘digital natives’ to be associated with them (Prensky 2001). These learning approaches ensure that learners are not passive participants in the learning process. As digital natives (Prensky 2001), aided and abetted by the internet, the learners learn from multiple sources, and not merely within the four walls of the physical classroom. Moreover, media-rich education is more engaging, relevant, and interactive, fostering understanding that is exponentially higher than that of a stationary textbook approach. Use of technology helps in configuring the learning opportunities in an engaging way, expanding the horizons of everyone in the school community beyond the traditional physical spaces.

The role of teachers within the digital learning space is of utmost importance. Schools and other stakeholders in education need to work with teachers in providing them professional learning opportunities on how to use the new classroom space in their role as facilitator. Teachers need sustained professional development opportunities to cultivate multiple skills in developing innovative learning strategies while fostering collaborative learning skills (Jakes 2016). For digital classrooms to become successful, mere infrastructure is not enough. Rather teachers need to both have a positive attitude, as well as pedagogical content knowledge, to realize the true potential of the digital learning culture. For the purpose of the book and this section, we will confine our discussion to the teaching space and the teacher as facilitator’s role in this context.

Genny Villa’s ‘[e-Learning Culture: From Theory to Practice](#)’; Veena Kapur’s ‘[Deconstructing Teacher Education: Technology and the Intern](#)’; and Nidhi Seth’s ‘[Technology Integration in Language Teaching: A Negotiated Terrain](#).’

The first chapter of this section, Genny Villa’s ‘[e-Learning Culture: From Theory to Practice](#)’ attempts to develop insights on how to help pre-service teacher trainers develop their e-learning culture. Within this chapter, Villa discusses the importance of e-learning in pre-service teacher training programmes, and the need to integrate ICT effectively in their teaching practice. The major thrust of the chapter is that every teacher has the potential to become competent in the use of one tool at one point, in the time-frame of teacher instruction. The chapter encompasses the journey of the teacher trainer from the point of acquisition and development of competencies that can prepare students to respond to societal expectations regarding twenty-first century skills.

The next chapter, Veena Kapur’s ‘[Deconstructing Teacher Education: Technology and the Intern](#)’, analyzes the problem India faces in coming to terms with the needs of digitized society and the role teacher education plays in that context. Kapur uses an online survey to understand the role of the teacher educator

in creating a digital environment, the attempts he/she makes in the incorporation of technology, perception to the additional learning the teacher educator engages with, and lastly, the teacher educators response to the situation.

The final chapter of this section, Nidhi Seth's '[Technology Integration in Language Teaching: A Negotiated Terrain](#)', stresses the importance of integrating technology with language teaching. The author draws upon survey responses and anecdotal records to explore how interns of a teacher education programme utilize technology for language teaching during internship and as in-service teachers thereafter. The major thrust of the chapter is the need for inclusion of technology-mediated resources and training as a part of teacher education.

The New Age Classroom and Its Teaching Strategies

The teaching and learning paradigm around the world is under increasing pressure to meet the demands of the new knowledge- and information-intensive global economy. While schools are committed to providing quality education to learners, the world in which the learners live and will work in, is forever changing and advancing at an even faster rate than improvements can be made. There is a growing realization that preparing a young person for a career and for success in life, requires a higher and a different set of academic skills and knowledge than those needed for success in education. For education to be relevant, it is important that students should be able to apply it to their personal areas of interest. Teacher Education needs to be aligned with these trends; keeping pace with these trends is the key to being a successful teacher (Szucs 2009). In this section, there is an attempt to understand the classroom of the twenty-first century, its novel features, and how to transact knowledge in the new context. The chapters included in this section highlight new teaching learning strategies that are the hallmark of the classroom today and how interns and teacher educators negotiate this new terrain.

Schools are involved in the transaction of knowledge with the learner, though in the wake of developments in the psychology of learning, and the digital onslaught, the method of transaction has undergone tumultuous changes. Knowledge no longer needs to be encapsulated, transmitted, and acquired from an all-knowing authoritative source, such as the textbook, nor does it need to be transmitted by the teacher. Facts are everywhere and available from a variety of sources and can be gathered merely by tapping the keys of a computer. More importantly, our learners are digital natives and are well-versed with the use of technology and can gather knowledge from various sources using strategies and techniques that they find effective (Prensky 2001). The traditional classroom is very different from the world that they are familiar with, and its functioning is disconnected from their world. Psychologically, the mass delivery system is faulty, because what is relevant for one child is not relevant to the other. Moreover, instructional practices in schools are out of step with how students learn outside the school, and also what students

need to know and be able to do to succeed in the world. To change this landscape it is important to reinvent teacher education so that the interns learn to teach in the application mode and transform the mass delivery model of teaching.

The measure of efficiency in teaching depends majorly on the process of teaching. In keeping with the emerging trends, the information transmitted in the class can no longer be dominated by a textbook, which the passive learner has to learn word for word to attain good marks. To change the level of activity on behalf of the students, teacher-centred, lecture-based instruction must be replaced with learner-centred, interactive and applied, and problem-based learning; transmitting information is to be replaced with critical thought and discussion. Most importantly, theory needs to be situated in life-situations in order to make it meaningful.

The entire process of teaching and learning is best fulfilled when both the teacher and the learner are enriched with education. The strategies employed in this process play an important role as they target the grasping capacity of the learner. The level of interest increases only if some well-formulated techniques are employed. Education is not just something helps you to make a mark in society and gain a social standing, but also something which enables you to think, reason, analyze, understand, take control, and utilize the opportunities that life presents. All the new-age methods employed in teaching are gaining popularity because they not only help in making the act of learning exciting but also because they help increase the ability to concentrate, focus, and apply the skills and knowledge acquired in the classroom. The different intellectual perspectives of students, coupled with new learning standards that require higher level thinking, more application based and engaged learning, necessitates fundamental shifts in how and what we teach. This shift in approach requires the following adjustments to the curriculum and assessment:

- Reconfiguring classrooms to focus on learning rather than teaching.
- Reorganizing instructional programs to give students opportunities to apply their knowledge and skills across disciplines.
- Using formative assessments for diagnostic purposes and to customise instructional strategies.
- Using technology to change teaching methods, and not merely making traditional practices more digital.

With a shift in the twenty-first century's socio-economic paradigm, teachers need to create new teaching strategies that can cater to learners with varying abilities and needs. A sound study of psychological theories has created a highly developed psychological framework upon which learning pedagogies are pegged. The teaching-learning process is no longer confined to the four walls of the classroom. Project-based teaching, cooperative learning, reflection, and collaborative learning, are some of the new approaches employed by teachers. Assessment strategies are also being reviewed in order to benefit the learner. These new approaches are conduits for altering and improving practice, and for overcoming ritualization (Breunig 2005). Teacher education needs to incorporate these new

approaches of teaching learning so that the interns are prepared to teach, compete, and collaborate in the new global scenario (Scott 2015).

Teacher education must impact the knowledge, skills, and attitudes of future teachers. The sooner the interns learn to infuse new knowledge and perspectives into their teaching, the more comfortable and skilled they will become in making this a natural and essential part of their teaching practice. Some teachers are leveraging social media, while others are using popular social networks or discussion forums to impart knowledge. While there have been pockets of advancement in institutions across nations, it is evident that sweeping systemic and institutional change is necessary. The chapters included in this section discuss strategies and methods that can facilitate change.

The first chapter of this section, Sriram's '[Engaging the Student: Redesigning Classrooms for Project-Based Learning](#)', discusses the relevance of project-based learning in classrooms, elaborating upon its relevance today. The classrooms in India, by and large, are not designed for active learning, and stress the top down approach. Project-based learning creates space for active learning for the learner, engaging both the learner and teacher equally. The major thrust of the chapter lies in exploring the strengths of this novel strategy of learning. The author discusses its characteristics and its implementation. In addition, the challenges faced by teachers and schools in India in implementing it are elaborated upon at length.

The next chapter, '[Facilitating Cooperative Learning: A Study of a Mathematics Classroom in India](#)' by Vandana Ghai, explores the pedagogical practices employed in the teaching of Mathematics. Ghai stresses the hierarchical and abstract nature of mathematics, which makes it a difficult subject to teach and understand, while identifying the pitfall of memorization within this context. Ghai highlights the effectiveness of cooperative learning as a teaching strategy for elementary stage learners of mathematics, fostering in them active learning skills and a deeper understanding of the subject. The chapter also presents a study conducted to examine the effectiveness of cooperative learning.

In the next chapter, '[Errors as Learning Opportunities: Cases from Mathematics Teaching Learning](#)', Ahuja speaks of how superficial teaching strategies of mathematics have paved the way for occurrence of several kinds of errors. The chapter discusses at length the attempts of teacher interns to use error analysis for an insightful understanding of their own mathematical understanding and teaching. The interns used Newton's Error Analysis Framework (NEA), which is discussed in detail while the experiences of interns using the diagnostic NEA are also reported.

Next, Rajput's '[PCK: A Key to Meaningful Learning in Science Classrooms](#)' uses Shulman's concept of pedagogical content knowledge as the basis of the study. She explores PCK of some effective science teachers and thereby analyzes the relationship of teachers' PCK to students' learning in the new age classroom. To understand the relationship of teachers' PCK to students learning, Rajput also attempts to explore the PCK of those science teachers who taught science not through rote learning but through great insight, employing innovative strategies. The author also studies the PCK of science teachers who still employed the methods of the traditional classroom, not paying heed to research and development in new

pedagogies. She employs qualitative inquiry, coupled with intensive interviews of teachers and analysis of their diaries/lesson plans. The sample consists of ten female science teachers of Class VI to X, with teaching experience ranging from one to thirty years. The teachers were selected from teaching contexts, of government and public schools.

The role reflection in altering and improving practice has strong currency in teacher learning and education, for overcoming ritualization, and can be seen as moving teachers from just thinking about how a lesson went, to more immediate reflection in action (Schon 1983). It can become a learned strategy and a more radical approach of getting interns to reflect critically on their own developing practice and on the societal context in which they find themselves (Zeichner and Liston 1996). Yadav's chapter on '[Reflective Practices: Exploring Teacher Educators' Perceptions](#)' focuses on the varied dimensions of reflective practice, highlighting how it is a multi-level process which makes the learning of the teacher an ongoing process, that does not end with the culmination of the teacher education programme. The author discusses the theoretical perspectives of Dewey and Schon to develop critical awareness of the social and political context of learning through reflection and action. The author has substantiated the theoretical perspectives of reflection with a survey of teacher educators' perception of reflection. The chapter also highlights the findings of a study conducted to understand teacher educators' perception of the significance of reflective practices in teacher education program of B. El. Ed.

The learner of the twenty-first century is desirous of education that doesn't alienate him from the real world but, rather, gets them ready for life, seeking an insightful relationship between the theoretical knowledge and its practical implications. They want to be completely synchronized with the world in which they live. Chaurasiya, in the chapter titled '[Changing Times: Need for Pedagogical Reforms to Foster Life Skills](#)', discusses how the advent of modernity has led to the emergence of a new order in terms of required abilities and skills. The development of a new skill set—Life Skills—comes to the fore, as necessary for employment and for the purpose of negotiating life. Education has a key role to play in this scenario. The researcher looks into the necessity for incorporating Life Skill education in the school system in the context of India. The writer discusses the issues that the current Life Skills programme being run in schools raises, and how pedagogy can work towards an inclusive model of skill-development that can be merged with the curriculum that is being followed in Indian schools at present.

The school space is often thought of as inconsequential in the process of holistic development of the learner. Bose and Bansal, in their chapter titled '[Redesigning the School Classroom: A Case Study of Mirambika](#)', explore the interplay between school spaces and their influence on the development of the learner. The main objective is to present a nuanced and holistic understanding of the sense of space that a child develops within the school. The method of data collection, in this study, is that of naturalistic observation and interviews. As outlined in the title of the chapter, Mirambika's school space has been chosen for the study. Mirambika Free Progress School, established in New Delhi in 1981, is based on the Integral philosophy of Sri Aurobindo and the Mother.

Social Justice and Inclusion

“An inclusive society is a society that over-rides differences of race, gender, class, generation, and geography, and ensures inclusion, equality of opportunity as well as capability of all members of society to determine an agreed set of social institutions that govern social interaction.” (Expert Group Meeting on Promoting Social Integration, Helsinki, July, 2008). This statement sets the tone for this section of the book.

An inclusive society is based on one important principle: the difference among members of society is acceptable, incorporating as it does, space for diversity and engagement. Further, voices of every member of such a society, from whatever diverse background, is heard and given cognisance. Their needs and concerns are taken into account, in transacting social activities. The capacity to maintain stability while adapting to change, is inbuilt in the situational matrix of such a society.

An important facet of an inclusive society is the tolerance and appreciation of cultural diversity enabling the society to move away from labelling, categorizing, and classifying people on the basis of class, caste, and race. The space for diversity of opinion provides the checks and balances critical for the development of society, while allowing diverse opinions to enter every discourse, thereby fostering flexibility and continuous change. The principle of inclusion and education for an inclusive society is an acceptable norm today and the aim is to create an education system that will develop the potential of all children in society while recognizing and valuing their differences.¹⁰ Inclusivity and mainstream education helps foster a rounded and inclusive educational experience for all pupils and foster democracy outcomes (Ruggs and Hebl 2012).

Education systems are the key in perpetuating or curtailing educational disadvantages for marginalized individuals and groups (Troyna and Hatcher 1992). The route to opportunity, employability, and security is in education. Yet, it is not the individual’s attributes and resources alone that impact educational opportunities and life chances (Bradbury et al. 2015). Where a person lives, who they live with, and the way of life in the community, are all equally important. ‘Social capital’ has been identified as the key to success in communities, and a healthy society depends on its social capital, as a good in itself. The challenge today lies in building social capital and social well-being within school systems.

In this section, the chapters that have been included cover a wide range of themes from Giftedness, human rights, social capital to multilingualism.

Sudipta Ghose’s ‘[Cracks and Crevices in Education Systems: Bridging the Gaps](#)’ is a reflection on world social issues. The author attempts to study how disparities in family backgrounds affect the available educational opportunities. Analyzing the quality of formal education in India, and how it varies from the deplorable to the excellent, Ghose supports her argument through diverse researches. The author

¹⁰UNICEF, ‘Be Inclusive: Celebrate and Value all Types of Diversity,’ Guideline 4B, Communicating with Children. https://www.unicef.org/cwc/cwc_58685.html.

highlights the insurmountable gaps between expansion of education and skills that need to be learnt by the learners and, consequently, the growing importance of the non-formal educational sector in this regard.

With the world becoming more and more inclusive, teacher education programmes need to be tuned to this change and prepare interns to reach out to the diversity of learners that are part of the classroom today. Sandhu's chapter, '[Unlocking Giftedness: An Introduction to Giftedness for Teachers in India](#)' presents the glaring lacunae in teacher education programmes and, consequently, the lack of explicit understanding of teachers regarding giftedness education in India, with emphasis on the Indian school context. The chapter highlights universal definitions, characteristics of the gifted, the associated problems, misconceptions, need for awareness in Indian schools and for a curriculum for the gifted.

Sandeep Kumar, in the chapter titled '[Exploring Pedagogy from a Human Rights Perspective](#)', attempts a study of pedagogy and classroom practices from a human rights perspective. The author suggests a theoretical framework for analyzing the interface of human rights and classroom pedagogical practices. The author incorporates classroom observations in order to explore the position of human rights perspective in classroom teaching learning processes. The discussion helps in bringing out the need of creating space for humane pedagogy in classroom practice.

Shilpy Raaj's '[Researching in Multilingual Settings: The Dilemma of the Mother Tongue](#)' attempts to analyze a local situation, in Kahalgaon, Bihar, from the perspective of primary grade teachers, parents and learners, of government schools. The major thrust of the chapter is understanding issues of language and education in Kahalgaon, in the state of Bihar in India, focusing primarily on language acquisition, of English as well as Angika, the local language. Extensive research, involving primary school learners in a multilingual context, highlights the crucial importance of mother tongue instruction during the learner's formative years.

Voices from the Field

In this section, space is given to practitioners to share their experiences in the field of education as they explore the transaction of educational theories and ideologies, and analyze how they are being negotiated within the ambit of the school context. One of the underlying assumption of this section is also that by acting on 'practicing what is preached', practitioners will be able to work towards the aim that underpins theoretical perspectives and forge a link to theory with practice. It is beneficial for teacher educators and teachers to understand the linkages between the theoretical perspectives they teach in the programme and the experiences they gain from the field. Moreover, it's transaction into practice provides great insight into the viability of theoretical constructs while assessing whether educational theories are being used as a pedagogical approach to learning and teaching in schools (Allsop et al. 2006).

The chapters included here are authored by practicing teachers, presenting their understanding of experience in the field, while highlighting how they perceive the relationship that exists between the theories they learnt and its transaction in praxis. Moreover, this reflection is also a viable platform for teachers to explore their situational matrix to accept the efficacy of educational constructs. In the reflections of practicing teachers, there is ample stimulation for educationists to reflect on the additional ways for making theories relevant. To create the best learning environments for the learners, the educationist needs to be familiar with the challenges and harsh realities of the school, while the teachers have to keep their practice rooted in educational practice. Theory informs practice; on the other hand, practice keeps theory grounded.

Teachers are provided a forum in this section to examine their beliefs and practices. Practicing teachers often find it difficult to restructure the theories they have learned into meaningful knowledge for their daily transaction in the classroom. The everyday practice in schools is not the field of action for an elaborated theory, as they were taught during their education.¹¹ They need to be assisted frequently in the critical examination of the discrepancy between theory and practice, through reflection and discussion. Shapiro and Kilbey say that “... children receive the best education when teachers develop what Dewey referred to as the habit of reflection, consistently questioning the existing education found in schools and society and finding viable alternatives” (1990, 70)

With the change in the perception of knowledge from a linear transmission model to an evolving constructivist view, that knowledge can be constructed through experience, and with the bridging of the gap between old and new learning, the role of the teacher has evolved from that of transmitter of knowledge to a facilitator of the learning process. It is in this context, that Charles, in the chapter ‘[Rivers and Fireworks: Social Constructivism in Education](#)’, examines sociocultural theory as a framework for classroom practices. The chapter is reflective in tone and metaphorical in nature, using the imagery of a river of social, cultural, political, historical, and religious factors that mediate and regulate individual experiences. The concept of the Piagetian Schema, is portrayed using the imagery of coat hooks, where new knowledge is hooked onto the old. The transaction of theories is explored through vignettes of the authors’ personal experiences. Moreover, reflection, the chapter posits, adds to understanding, evolving the learning experience into a rich tapestry of understanding.

Wadhwa’s chapter, titled ‘[Heterogeneity and Dynamism in Indian Classrooms](#)’, explores the Indian classroom in the wake of two educational provisions, the Right to Education Act 2009 and Churnoti 2018. The chapter posits that these Acts have influenced the contemporary Indian secondary classroom in Delhi and examines their implications on the Indian classroom. While conceptualizing a dynamic classroom, exploring the ways in which heterogeneity interfaces with classroom

¹¹K. Vreugdenhil, ‘Bridge between Theory and Practice,’ http://www.nelecom.de/pdf/drvreugdenhil_bridge_between_theory_and_practice.pdf.

spaces, the author examines policy decisions and inferences that can be drawn from them for the heterogeneous classroom. The chapter draws inferences from school contexts of government schools and from Mirambika, as a manifestation of a dynamic classroom space. Mirambika has been discussed as an example of dynamic space, in the section, *The New Age Classroom and its Teaching Strategies*.

‘*The Ethics of Inclusion*’, by Geeta Kumar, examines her experiences as a teaching assistant at a school in England. The chapter explores the concept of inclusion in a real school environment while examining the legislative pressures on schools in giving access to children of all abilities. Exploring the praxis of inclusion, Kumar draws on the wealth of her personal experiences, incorporating case studies in examining the relative success of inclusion in school practices. The chapter posits the ethical questions that envelop this principle: Is inclusive education is the best course for SEN children? Who is the best person to decide this? Does inclusive education come at a cost? The most pertinent question is: Who bears the cost: the mainstream children, the teachers who manage these unwieldy classes, or the SEN children themselves? The chapter does not provide a solution to these questions of social responsibility, for the issues are too complex to have cut and dried solutions. The author states that “we should probe these ethical questions further to bring out a more just and fair solution for all.”

Sehgal’s chapter, ‘*The Blended Classroom in Language Teaching: A Perspective on the Significance of Technology*’, mainly focuses on how technological inputs can be assimilated in order to generate conducive conditions for language learning. The preliminary deliberation in the chapter is on two ubiquitous terms of modernity: ‘blended’ and ‘internet’. The understanding of these terms, and how they have impacted classroom practices, is the main thrust of the chapter. The role of the teacher is seminal in this context and Sehgal draws upon available research and field-based enquiry in understanding how incorporation of technology has a bearing on pedagogical practices. Significantly, perspectives from the field have been incorporated, from those teachers who have used technology. These experiences facilitate an understanding of the classroom practices that have been mediated with technological inputs.

‘*Teacher Perceptions: The Importance of Being a Reflective Practitioner*’, by Richa Dang, explores the necessity and importance of a reflective practitioner. The development of a teacher’s perceptions and beliefs are of seminal importance to structuring classroom practices and to the growth of the learner. The major thrust of the chapter is on exploring the link between beliefs and reflections and forging a link between the teacher’s perceptions and reflective practices. The author uses this link in charting her progress as a reflective practitioner and probing the direction of her classroom discourse and belief system.

Aneja’s chapter, titled, ‘*Childhood: Theoretical Perspectives and Lived Realities*’, explores the diverse constructs of childhood in academic discourse and the lived reality of the child as learner. The chapter posits the importance of the social milieu of the learner in classroom space while validating the construct of ‘multiple childhood’ as a corollary of growing up in a specific community. Aneja examines how

these experiences bring out, in stark relief, the differences and variations in understanding adult-child relations, the role and responsibilities of the child, their expectations from schooling and peer interactions. The author, reflecting on the multiplicity and ambiguity of contemporary childhood, juxtaposes her own childhood experiences and experiences of children of Bodhshala school in a village in Uttarakhand.

This book attempts to present and analyze the present educational space while trying to address the issues of theoretical and practical import. Each of the chapters cover the undulating terrain of education, exploring its theoretical constructs while the differing facets cleave together in a nuanced representation of education. The multiple perspectives on education that emerge from the discourse will help in informing educationists about the constraints and hurdles encountered in the field, while giving space to the practitioner to infuse his practice with theoretical understanding.

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Part I
**The Digital Learning Culture: Potential
and Possibilities**

Chapter 2

e-Learning Culture: From Theory to Practice



Genny Villa

Introduction

Information and Communication Technology (ICT) can play a major role in education. However, research studies (see Villeneuve 2011) show that there is a gap between how people use new technologies in their everyday lives and how they are integrated—or not—in the classroom. This gap is still causing distress among teachers and even drop-outs from the profession (Quebec’s Steering Committee of Teacher Training 2001; Van der Boom et al. 2015; OECD 2016). Furthermore, teacher trainers’ e-learning culture, defined by Viens and Renaud (2001) as *their representations regarding ICT, their attitudes, and their skills that reflect in their habitual teaching practice*, becomes essential when designing and implementing teacher training programs to help pre-service teachers integrate ICT pedagogically and effectively in their teaching practice. However, trainers are themselves lacking in training in this area. Professional development activities do not train teacher trainers on their e-learning culture (Viens et al. 2015). Most training activities focus on ICT use, but there is no actual inclusion of reflective exercises regarding ICT integration (Villa 2016). Teacher training programs should, therefore, aim at ensuring that: (1) ICT are used in the classroom in a way that facilitates their future use in classes at the elementary and secondary school level, as pre-service teachers need to develop higher ICT skills, and also because they tend to teach in the same way they were taught themselves (Hargreaves 2003); and (2) future teachers acquire the knowledge, skills, and attitudes that will empower and equip them with the required skills and competencies, to effectively respond to the needs of today’s students. These findings indicate an increasing need for new focus on approaches for ICT integration, which currently rely on improvisation and personal resourcefulness to address these concerns.

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Research Problem

It is essential that teachers are trained in integrating ICT in their teaching practice and are able to align it to the societal demands of preparing students to effectively participate in the knowledge society. However, choosing the methods and appropriate resources cannot be made without first identifying their own e-learning culture and contextual/human factors (facilitating conditions/constraints) that determine their practice. In the literature, many researchers have focused on identifying the aspects that have an impact on teachers' ICT acceptance and use (such as, Venkatesh et al. 2003; Villeneuve et al. 2012; Angeli and Valanides 2009; Dede 2014; Mishra and Koehler 2004, 2006) as well as on the development of their ICT skills (such as Somekh 2008). Nevertheless, very few studies have been conducted with the objective of identifying and describing how to incorporate social context and human factors, while providing strategies to support teachers' integration of pedagogy with ICT.

Research Objectives

This chapter has a twofold objective. The first is to present the characteristics needed in any training intervention, identified in the literature, while responding to the principles and requirements to be followed in interacting with adult learners using ICT. The second objective is to describe the procedure undertaken in designing, developing, and implementing an intervention that fosters participants' awareness and development of their e-learning culture, while having a positive impact on their intentions to (and actually) integrate ICT in their teaching practice.

For doing this, the IntersTICES model (Peraya and Viens 2005), will be utilized. This is a three-dimensional, systemic model that takes into account the actors and their characteristics that are encompassed in its e-learning culture dimension, which is central in the process of ICT integration. This model also allows placing any training intervention within the context of teacher interactions (Viens et al. 2015) and may be used as a viable solution, which may adequately support design when looking for appropriate essential methods for teacher training programs in ICT integration (Villa 2016).

This chapter is therefore divided into six sections: Section "Training Intervention: Characteristics and Principles" describes the characteristics and principles to be considered when designing training interventions for teachers/adult learners. Section "The Interstices Model" presents the IntersTICES model. Section "Training Intervention: Procedures and Strategies for Design and Implementation" presents proven effective procedures and strategies, which could be used when aiming at providing experts (e.g. researchers, trainers) with the appropriate means to help teachers develop their e-learning culture, while planning and intervening for a successful adoption of ICT. Section "Synthesis of the

Effective Implementation of a Training Intervention” presents the synthesis of the effective implementation of a training intervention. Section “Final Remarks and Conclusions” presents some final remarks and the conclusions reached.

Training Intervention: Characteristics and Principles

Taking into consideration the type of participants generally targeted in this research field, any training intervention, as well as any activity to be developed with them, is to be designed acknowledging certain principles identified in the review of literature. The principles considered are those that characterize adult learning theory (andragogy) (Knowles 1984; Kearsley 2010), which state that: (1) Adults need to be involved in the planning and the evaluation of their instruction; (2) Experience (including mistakes) provides the basis for the learning activities; (3) Adults are most interested in learning subjects that have immediate relevance and impact to their job or personal life; and (4) Adult learning is problem-centred rather than content-oriented.

In this chapter, the following six principles developed in a previous research study (Villa 2016) are established as the basis for an effective training intervention for integrating ICT in teachers’ practice: (1) Training focusing on addressing (teachers’) own identified needs; (2) Facilitating conditions and constraints being taken into consideration; (3) Trainer acting as a coach and guide; (4) Approach fostering reflection on benefit of seeking some ICT pedagogical added value; (5) Approach promoting social co-construction of knowledge (via exchange of ideas as well as individual and collective reflective practice); and (6) Training approach which allows time for maturation of processes and reflection.

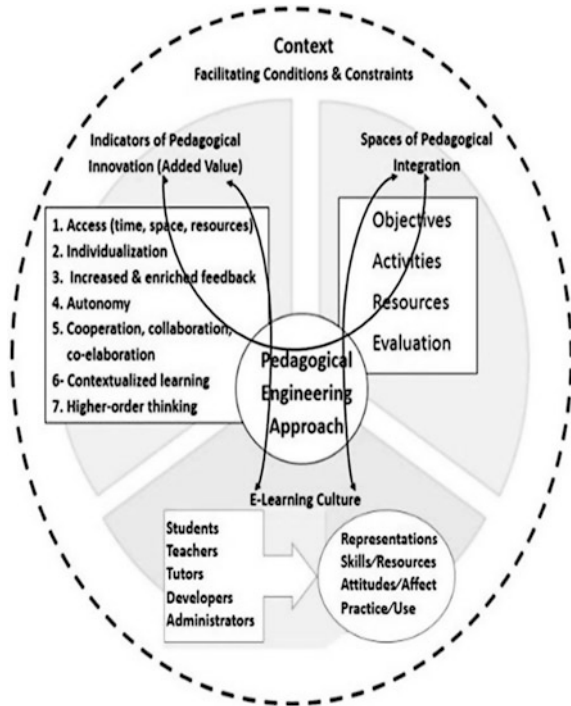
The Interstices Model

The IntersTICES Model (Fig. 2.1) developed by Peraya and Viens (2005) proposes an instructional design-type perspective. It encompasses three major interrelated dimensions, which are intertwined through a pedagogical engineering approach.

These dimensions are: The seven indicators of pedagogical innovation (added value); spaces of pedagogical integration, which encompass the internal and external coherence of the system based on the specific context; and the participants’ e-learning culture.

The seven indicators of pedagogical innovation—access; individualization; feedback; autonomy; cooperation, collaboration, co-construction; contextualized learning; higher-order thinking—are meant to provide a reflective scaffolding to identify in what way ICT may enrich the learning environment.

Fig. 2.1 The InterSTICES model Adapted from Peraya and Viens (Villa 2016)



The four areas of pedagogical integration—objectives, activities, resources and evaluation—ensure the internal coherence of the activity, by fostering the alignment among them. For example, if the role given to the indicator ‘autonomy’ was made explicit in the objectives, it should be present and explicit in the other areas of the pedagogical integration, ensuring the internal coherence of the model. The external coherence is checked by taking into account the specific context found; institutional and social context, logistic/time constraints, number of learners, prior knowledge, and human and technological resources (Peraya and Viens 2005).

The concept of e-learning culture was first introduced by Viens and Renaud (2001), as a *socio-constructivist culture* (p. 22), and further developed by Peraya and Viens (2005) and Villa (2016), through an approach aimed at understanding the factors that may be at play in a training intervention, as well as their impact, instead of focusing mainly on the training tool as a technological object. E-learning culture is, therefore, considered a complex phenomenon that needs to take into account several dimensions, including psycho-social aspects and the real context of the implementation setting (Villa 2016). As mentioned before, it encompasses teachers’ representations regarding ICT, their attitudes, and their skills reflected in their habitual teaching practice (Viens and Renaud 2001).

Training Intervention: Procedures and Strategies for Design and Implementation

The planning of an InterSTICES-Type Activity (Villa 2016) is consistent with the steps suggested by Action Research (Kemmis and McTaggart 1981; Sagor 2005) that guides the research approach. This comprises four steps: (1) Plan—Clarify vision and targets; (2) Act—Articulate appropriate theory; (3) Observe—Implement action and collect data; and (4) Reflect—Reflect on data and plan informed action.

The InterSTICES-Type Activity itself (Villa 2016) consists of the following three stages: An introductory training Intervention; Follow-up and (optional) personal support; and a Final collective meeting.

Introductory Training Intervention

An introductory 3-hour meeting to be carried out with all the participants is planned taking into consideration the characteristics identified through the literature review in terms of the principles and requirements of effective ways of intervention with teachers/adult learners who aim to use ICT. The aims of the meeting are: (1) facilitating the appropriation of the InterSTICES model (Peraya and Viens 2005) by participant teacher trainers; (2) helping them to become aware of their own e-learning culture, and of the potentiality of ICT to address their needs by using the InterSTICES model.

This introductory training intervention is of about 3 h. It includes:

- (1) Presentation of the InterSTICES model and its three dimensions. Embedded in this presentation is the introduction of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) which entails: Acceptance of a technology depending on two types of beliefs: the technology's perceived usefulness and, its perceived ease of use. As such, the perceived usefulness of technology implies help in attaining improvement in job performance; the organizational and technical infrastructure perceived as support in the use of the technology (Facilitating conditions); human factors (such as attitudes and beliefs) perceived as having a significant influence on teacher behaviours, and consequently on their preparedness to use ICT for learning and teaching. The above-mentioned beliefs and perceptions are thoroughly considered and presented through the merging of UTAUT with one of the dimensions of the InterSTICES model (Villa 2016), namely, the e-learning culture of participants. This merging allows a better consideration and understanding of the role human factors play while aiming at integrating ICT in teachers' practice; and
- (2) Introduction and explanation of what is involved in the 'Choice of Activities' step in terms of objectives; characteristics, procedures, and strategies focusing on developing teacher trainers' e-learning culture and supporting them to ensure achievement of targeted objectives.

Presentation of the IntersTICES Model and Its Three Dimensions

IntersTICES' characteristics and basic concepts are based on three dimensions and the pedagogical engineering approach that articulates them. It is a dynamic process of interaction with the people, which is in tandem with the steps of the Action Research (AR) approach utilized. The systemic and systematic analyses of the participant teacher trainers' needs and their teaching context (i.e. their course and its objectives) are emphasized. By doing this the guiding principles and the reflective practice involved in deciding on pedagogical value added action that needs to be pursued and integrated in an activity of their own, is acknowledged.

The Indicators of Pedagogical Innovation (Added Value) Dimension: To present the IntersTICES model, the starting point is the description of the dimension comprising the seven indicators of pedagogical innovation: Added Value. The Pedagogical Added Value (PAV) encompasses how ICT tools (are going to) enrich the learner's pedagogical environment, and or, how ICT tools foster a richer learning experience (Peraya and Viens 2005).

The participant teacher trainers are asked to share with the group what their definitions/understanding for each indicator is, before being presented with the definition of the model (Villa 2016), along with some examples and illustrations to clarify its meaning, potential, and scope. This strategy allows participant teacher trainers to become aware of what specific added value they would like to look for and integrate into their activity, which ICT tool would facilitate this, and assess their investment in terms of time, ease of use, and learning how to implement it.

The Space of Pedagogical Integration Dimension: This dimension refers to objectives, activities, resources, and evaluation, which comprises facilitating conditions and constraints of the context, that is, their course and its objectives. Working with this dimension encompasses: (1) some questioning based on the concrete activity the participant teacher trainer needs to resolve, experiment, and address; (2) taking into account the e-learning culture of all people involved (such as, teachers, students, school staff)—since in some cases, teachers willing to integrate ICT in their practice may find themselves unsupported by principals and/or parents who do not see the pedagogical potential of ICT, and hence do not allocate the resources required for teachers to be able to do so—and the context.

The awareness resulting from this questioning is fostered by the pedagogical engineering approach, facilitated by IntersTICES. By following this approach, a few questions can be addressed: the relevance of any decision/action to be taken, the pedagogical added value sought, internal and external coherence, conduct needs, and context analyses. Participants are, therefore, encouraged to talk. This dimension is briefly presented and further elaborated during the next meeting for follow-up and personal support, to be held on an individual basis with each one of the participants. During these individual meetings, they are to work with the expert (researcher or trainer) on the activity they choose, and with which they want to integrate an ICT tool to address a need of their course/students.

The e-Learning Culture Dimension

Since integrating ICT implies a change in their practice or their intentions to practice—depending on where participants are in the process (Villa 2016)—the work with teacher trainers needs to be focused on three aspects of their e-learning culture:

1. Their previous teaching practice integrating (or not) ICT;
2. Their representations of facilitating conditions and constraints for effectiveness of ICT use (for example, teachers may think that integrating ICT in their practice is very good; that there is potential in their use, but they may also wonder under what conditions and constraints it can be done. Thus, in line with their feelings they decide whether or not to embark on this training activity);
3. Their skills and resources.

Their perception of ease of use (e-learning culture, in terms of self-efficacy beliefs), and of resources available to support them in the change process (such as, time, training, a technician), as well as on their attitudes toward technology integration in their teaching practice are taken into consideration. Furthermore, as the aim is to have an impact regarding developing awareness of how teachers (in general), not only teacher trainers, (may) feel about accepting to work with and using technology, the intervention is aligned with the proposed merger of UTAUT and the IntersTICES model via the e-learning culture (Villa 2016). It is indicated that the teachers' intended use is highly dependent on the combination of the three above-mentioned aspects, which may mirror their particular e-learning culture (Villa 2016).

Choice of Activities

During this introductory training intervention, what is also presented and explained is what is involved in the 'Choice of Activities' step in terms of: (1) Objective(s)—to address an identified need of their own course/students; (2) Characteristics inherent to the chosen activity; (3) Procedure—Focusing on developing their e-learning culture; (4) Strategies—provided to support participants and ensure achievement of targeted objectives.

Teacher trainers are asked to choose an activity of their own courses into which they would like to integrate ICT so as to address a need of their course/students. Participants are then provided with the guidelines presented in Table 2.1. The guidelines were designed for supporting them when implementing their activity. Working with these guidelines and supported by the pedagogical engineering approach implemented in the research, covering and interrelating the relevant conditions and actors has proven to facilitate a more conscious process of reflection and analysis when deciding on their activity (Villa 2016).

Participant teacher trainers may explicitly refer to the particular facilitating conditions and constraints to be considered when planning for integrating ICT into

Table 2.1 Guidelines suggested for working on teacher trainers' activity integrating ICT (Villa 2016)

Choosing an activity into which you would like to incorporate elements of pedagogical innovation (added value-PAV), from the concepts discussed during the training intervention	
Items	Comments
1. Among the activities of the different themes of your course, choose an activity in which you would like to integrate ICT. State it	
2. If there is an already existing activity in which you would like to integrate ICT, which aspect do you want to change/improve?	
3. What new ways of doing things that would help achieve your goal would you like to explore using ICT?	
4. What is <i>the</i> pedagogical added value (PAV) you would look for? To what degree? Why? What would be other related added values?—PAV refers to: How ICT tools are going to enrich the learner's pedagogical environment; how ICT tools foster a richer learning experience (Peraya and Viens 2005)	
5. State the objective you would like to attain for this activity	
6. What are the resources needed to carry out this activity and achieve this objective?	
(1) Resources set up for you (the teacher trainer)	
(2) For your students. How do you identify needs?	
7. What are the facilitating conditions?	
8. What are the constraints?	
9. Regarding the evaluation, what (new) forms of assessment would you like to explore?	
(1) Have you already thought about this kind of assessment? Why haven't you done it before?	
(2) How would ICT allow you to do so?	
10. What are the advantages?	
(1) For you (the teacher trainer)	
(2) For your students	
11. What are the facilitating conditions?	
12. What are the constraints?	

their pedagogical activities; such as, is the tool they would like to integrate into their activity available for free download? What kind of tutorial, personal support, and scaffolding are available to them (and their students) while taking ownership and learning to master the tool? How much time is required for them to learn the tool; how some pedagogical strategies are to be explored that can be used to support enhanced learning activities, ensure richer learning environments, provide for higher student involvement and bring about effective teaching interventions?

Thus, these guidelines allow teachers to do this planning to use the tools in a more informed and pedagogically powerful way than before. The guidelines enable teachers to bear in mind the distinct added value and the potential of the ICT tool in making their selected activities more interesting and relevant, while helping their students acquire the targeted skills and knowledge.

Follow-up and (Optional) Personal Support

To develop the second phase of the IntersTICES-Type Activity, besides the guiding principles that characterize adult learning and andragogy (Knowles 1984; Kearsley 2010), there is also a need to acknowledge the guiding principles identified through the review of literature, regarding the IntersTICES model (Villa 2016). As such, according to Veins et al. (2004, 2005), the following principles need to be considered while designing this type of intervention: Identification of immediate needs and the actions arising; implementation of needs analysis and action plan, with characteristics and operating conditions of each project determining the courses of action; identification of facilitating conditions and constraints; provision of personal support; meetings responding to specific requirements of teams; activities being addressed from their own perspective as practitioners/professors-researchers; focus on developing their e-learning culture not on the tool itself; and reflective practice.

To start, participant teacher trainers are asked to choose an activity with which they want to integrate some ICT tools aiming at responding to an identified actual need of their students. The identification of facilitating conditions and constraints follows, taking into consideration the context; that is, their course and its objectives. This allows for planning and allocation of the appropriate resources for the activity to be effectively implemented. To do this, the trainer must act more as a coach, guide or pedagogical interlocutor,, facilitating discussion and exchange of ideas, providing just-in-time scaffolding to foster growth and empower the teacher to act.

By using the IntersTICES model (Peraya and Viens 2005), and the guidelines (Villa 2016), the engineering pedagogical approach is implemented, which promotes and facilitates participant teacher trainers' reflection through questioning of their targeted objectives, the specific facilitating conditions and constraints of the context they were working in, as well as of the benefit of looking for some ICT pedagogical added value. By promoting exchange of ideas and reflective practice, both individually and collectively, social construction of knowledge is also prompted. Moreover, this approach includes a time frame for maturation processes and reflection. It is a mandatory requirement to have more than one personal encounter with participants—three are recommended—to be effective:

The first one is the introductory training meeting, where they choose the pedagogical added value (PAV) they wanted to look for through the integration of an ICT tool into their activity.

The second one is to start exploring the ICT tool to be integrated into the activity they choose, to achieve their targeted objectives, and cater to their needs.

The third one is to reinforce and support them in their attempts to take ownership of the tool, and of the appropriate strategy associated with their activity.

During these individual meetings, a systemic and pedagogical engineering approach is incorporated in order to support participant teacher trainers during the whole process of integrating ICT in one of their course's activities. This is achieved according to the identified needs in each case. The teacher trainers are offered options to use personal support from the time they select the activity with which

they would like to integrate ICT. The teacher trainers are given opportunities to look for a specific pedagogical added value, to discuss alternative forms of evaluation, as well as the advantages and implications that are available for them and their students.

These pedagogical strategies are implemented with the objective of ensuring appropriate opportunities for teacher trainers to gain experience, as well as the space to reflect upon the pedagogical added value of technology, while providing them with structured occasions to discuss, reflect, and share tips regarding technology integration issues in a safe environment.

Data from the interviews, as well as notes taken during these meetings, suggest that pre-service teacher trainers' integration of ICT in their teaching practice can be fostered by: (1) showing them how they can use ICT to address identified need(s) of their course/students; (2) demonstration/modelling and co-creation of tool(s)/instruments; (3) discussion and reflection to try out and refine the resulting instruments, activities, and alternative forms of evaluation; (4) further discussion about benefits, advantages and implications for teacher trainers and their students, such as tips for designing peer evaluation by using rubrics, may all act as positive feedback helping to improve pre-service teachers' self-efficacy beliefs and develop their e-learning culture (Villa 2016).

It is observed that the follow-up and the personal support provided to the teacher trainers, fostered improved practice as well as impacted their beliefs and ICT representations, in turn, effecting positive changes in their self-efficacy beliefs. A chain of influence can be observed: practice feeds, confirms, and, perhaps, even modifies the representations. For example, participant teacher trainers were under the impression that in order to learn how to use the tool they wanted to integrate with their activity, it would require more time than it actually took. They realized that, by exploring the tool as a team with the researcher/trainer and by being shown how to use it, it took them just a few minutes to learn to use it by themselves. Data supported the evidence that participant teacher trainers were ready to learn to use tools, one at a time, when: (1) it was aimed at addressing their course/students' needs; (2) follow-up and optional personal support were made available; (3) together with the researcher/trainer, they discussed the suggested tool, explored it, saw how it worked, its application(s) (via modelling or watching a video) assessed its suitability to address the identified need, and tried it out accompanied (Villa 2016).

Systematic Approach to Be Implemented to Support Teacher Trainers

The main steps to be undertaken to support and guide participant teacher trainers, during the process involving the utilization of ICT and coaching for the production of activities integrating ICT, may be implemented as follows:

- (1) Once their activity and targeted ICT pedagogical added value is chosen, each participant then meets with the expert (researcher or trainer) to reflect on and

have a pedagogical discussion about every aspect conducive to its implementation. This discussion is facilitated by exploring, in detail, each one of the aspects involved in the dimension of the IntersTICES model referring to *Spaces of Pedagogical Integration* (objectives, activities, resources and evaluation), presented during the initial training intervention, (see Fig. 2.1) and that takes into account their specific contexts, and checks for internal and external coherence.

- (2) Identification of facilitating conditions, as well as of constraints, as an essential requirement to ensure allocation of required resources, successful implementation of the activity and achievement of their targeted objective(s).
- (3) Identification of appropriate tool(s) that would facilitate achievement of their activity's targeted objective(s).
- (4) Demonstration/modelling and co-creation of tool(s)/instruments. For example, Using Google Form to design a diagnostic test to identify students' prior knowledge about a school subject matter; using Screencast-O-Matic or Camtasia to create on-screen videos—embedded in PPT presentations—for remedial tutorials that would allow students to acquire the identified prerequisites autonomously.
- (5) Complementing and enhancing mastering of the tool(s) by using video tutorials
- (6) Further discussion and reflection to try out and refine the resulting instrument(s).
- (7) Discussion regarding alternative forms of evaluation, along with benefits, advantages and implications for teacher trainers and their students. These may include, for example, tips for designing peer evaluations by using rubrics.

In Table 2.2, are summarized the stages and strategies to be considered when developing and implementing the IntersTICES-Type Activity.

The identification of these stages of the training intervention, as well as the training/implementation strategies at this phase, aims at anticipating pre-service teacher trainers' possible anxiety and low self-efficacy beliefs regarding the process of ICT integration. This identification would allow pre-service teacher trainers to find the means to overcome them, while facilitating the development of their e-learning culture.

Furthermore, it is recommended that the following list of facilitating conditions/constraints be taken into account for the corresponding consideration and allocation of resources, when planning for ICT integration and use:

- Access to (formal) pedagogical ICT training (for teachers)
- Access to (formal) pedagogical ICT training (for students)
- Assigned recognized time for attending pedagogical ICT training (for teachers)
- Assigned opportunities to discuss/exchange and learn with/from colleagues (for teachers)
- Access to optional personal support/mentor (for students)
- (Individual) access to a pedagogical interlocutor (for teachers)
- Access to a technician (for teachers)
- Access to a technician (for students)

Table 2.2 An IntersTICES-type activity: stages and training strategies that facilitate the development of teacher trainers’ e-learning culture (Villa 2016)

Training intervention	Training strategies	Check (✓) when done
Introductory training intervention (group or individual)	<ul style="list-style-type: none"> – Design and implement the training intervention based on identified principles – Present the three dimensions of IntersTICES and make explicit the pedagogical engineering approach that articulates these three dimensions aiming at fostering appropriation of the model by users – Ask participants to select activity with which they want to integrate ICT tool, and decide on what PAV to look for, to address an identified need or achieve a targeted objective 	
<p>Follow-up and personal support</p> <p>– Customized to respond to particular needs</p> <p><i>N.B. Keep in mind that teacher (trainers) are willing to learn about and use a tool that respond to one (one need at a time) of their identified needs, as well as one tool at a time</i></p>	1. Discuss pedagogical added value (PAV) sought, explore tool that allows addressing of need using videos/tutorials available on YouTube	
	2. Assess ease of use of tool, based on participants’ e-learning culture and its feasibility to address specific identified need	
	3. Introduce (another) ICT tool, such as Google Form, to the most-used three basic ones (Word, PPT, email)	
	4. Explain pedagogical added value (PAV) of suggested new tool (like Google Form), and encourage reflection about PAV	
	5. Foster awareness of facilitating conditions and/or constraints regarding integration of a specific ICT tool	
	6. Support first steps toward learning about and mastering of the tool	
	7. Present, show, and demonstrate step by step how to use the tool through a specific and simple example of application. For example, build a short survey from scratch, including	

(continued)

Table 2.2 (continued)

Training intervention	Training strategies	Check (✓) when done
	at least two or three types of questions; choice of background or theme; sharing options	
	8. Foster awareness of the teaching/ learning context	
	9. Encourage reflection on benefit of including some ICT PAV (initiation)	
	10. Promote ability to link content, pedagogy and technology	
	11. Encourage in-depth reflection on benefit of seeking specific ICT PAV to enhance teaching approach designed to achieve targeted objectives	
	12. Foster awareness of specificities of the tool, its suitability, and potential for integration in a chosen activity and context	
	13. Provide scaffolding during actual design of activity integrating ICT tool. For example, use IntersTICES (Indicators of PAV+ Spaces of Pedagogical Integration) and the Guidelines designed for backing the choice of activities to support this design and implementation	
	14. Enhance the capacity to transfer	
	15. Foster actual practice presenting some form of (internalized) adoption of activities integrating the ICT tool looking for PAV	
	Post-intervention (group) Interview (individual)	– Share experiences/best practices
– Share useful tips and clues		
– Provide/receive further insight regarding (impact of) intervention		

- Guidelines/tutorial available in (language)
- (Full and Free) access to the tool/program (for teachers)
- Tool/program installed in teachers’ personal computer
- (Full and Free) access to the tool/program (for students)

- Tool/program installed in Lab (for students)
- ICT skills/self-trained (teachers)
- ICT skills/self-trained (students)
- Time to learn the tool/training—(teachers)
- Teacher’s availability (workload/schedule)
- Student’s availability (workload/schedule).

The Final Collective Meeting

It is suggested that participant teacher trainers get together with the expert (researcher or trainer) to share and discuss experiences, aspects, situations, and the like, which they encountered during the design of their activity integrating an ICT tool and, in some cases, during the actual exploration and use of the tool chosen to address the identified need of their course/students. The aim of this sharing is to take the pulse of the actual experience they lived, to refine the interview questions to be asked individually, looking for clarification and in-depth information (Villa 2016). Also, considering that learning is a social process, this is an opportunity for participants to share and exchange tips, best practices and experiences, as well as their perceptions regarding any changes in their e-learning culture as a result of the training intervention.

Synthesis of the Effective Implementation of a Training Intervention

Two general and overarching principles are clearly identified, which have to be considered when implementing a successful teachers’ training intervention to integrate ICT. These principles, supported by the pedagogical engineering approach facilitated by IntersTICES, are as follows:

- (1) Undertake a systemic and systematic procedure that supports carrying out more specific analyses of the needs and context;
- (2) Take into account the actors’ e-learning culture. For example, when aiming at integrating an ICT tool into a teaching activity, one can wonder whether the teachers have a good understanding regarding what it takes in terms of knowledge, skills, and resources to do so, or whether they require some personal support. Do they take a positive attitude towards this integration? If not, which resources should be incorporated into the pedagogical strategy when planning the training intervention?

Two other considerations need to be acknowledged: (1) Focus on teachers’ own projects; and (2) Avoid long, drawn-out activities.

By creating Table 2.2, a reflective and critical exercise was embarked upon regarding the training intervention procedure that takes place over four main stages:

- Stage 1 Undertake the analyses of the needs and context (for examples, know the objectives; know the constraints)
- Stage 2 Focus on the pedagogical added value of certain uses of ICT
- Stage 3 Consider the actors' e-learning culture. (See example in (2) above)
- Stage 4 Foster internal consistency. This stage encompasses the pedagogical choice, a kind of pedagogical design. This involves identifying a goal; getting things implemented; handling resources carefully and according to identified needs; and adapting.

In short, it is strongly recommended that the pedagogical added value sought be made explicit, questioning the actors' e-learning culture and, only then, the pedagogical design should be undertaken. Often, instructional designers/teachers conduct the analysis of needs and context, as a first step, followed by the preparation of the pedagogical design (see stage 4 above) without considering the above mentioned stages 2 and 3.

By using IntersTICES, these two stages, which are missing from other models and/or approaches, are explicitly implemented: What I am seeking to achieve considering the facilitating conditions and constraints?; How might the e-learning culture nuance what we do and how we do it? Will it require supplying other resources?

The emerging guiding principles, afore mentioned in the Training Intervention: Characteristics and Principles section, are an end product of the training intervention implemented to operationalize the IntersTICES model. The outline of the strategies that may facilitate any pedagogical intervention for ICT integration was IntersTICES model's natural outcome, which has been named an *IntersTICES-Type Activity* (Villa 2016).

Based on these guiding principles, the next step is the training, applying the suggested strategies: strategies 3–15 (Table 2.2). These steps may be followed/repeated every time there is a pedagogical need to be addressed, aimed at achieving a targeted objective.

The ICT tool introduced, learned, and integrated may have a (noticeable) impact on the teacher trainers' e-learner culture, while facilitating its development taking into account the level they may be at. Every time teacher trainers need to learn about a new ICT tool—one at a time—to address a specific need, they are developing their ICT competency. Moreover, the support provided while having to learn about and being able to use the ICT tool in an activity of their own, was shown to foster in them growing feelings of self-efficacy (Villa 2016), which in turn can nurture a positive attitude towards ICT use, and increase their intentions to (actually) integrate ICT in their teaching practice. This whole process results in a developed and more comprehensive e-learning culture (Villa 2016).

Furthermore, the findings suggest that the IntersTICES-Type Activity is the set of strategies most closely related to the field under consideration: Empowering

teacher trainers to develop their e-learning culture. It may also provide educators with a sound pedagogical foundation, as well as practical skills to meaningfully integrate ICT into their teaching practice.

Final Remarks and Conclusions

As suggested by the analyses of the interviews and data from other sources, teacher trainers' attempts to integrate ICT in their teaching practice are influenced by their newly-developed e-learning culture: by their improved representations of the pedagogical added value of technology for their students, their course, and for them; their awareness regarding availability of resources such as support from a coach or a more competent colleague, or by a technician at their disposal; their changed attitude in terms of time required to learn how to use the tool and master it, as well as by their improved self-efficacy beliefs. Therefore, these changes could be thought as actually being due to the impact of the IntersTICES-Type Activity on participants' e-learning culture (Villa 2016).

Keeping in mind that “teachers tend to teach in the way they were taught” (Hargreaves 2003), teacher training programs should promote the development of pre-service teacher trainers' e-learning culture that will allow them to model and demonstrate effective ways and/or strategies to integrate ICT pedagogically. This would better prepare pre-service teachers for effective use and integration of ICT in their future K-12 classrooms.

In the research it was observed—and corroborated with the participant pre-service teacher trainers—that providing opportunities to reflect on the pedagogical uses and implications of ICT integration had a positive impact on their intentions to (actually) use and integrate these same tools in their teaching practice (Villa 2016).

Success in this regard may require a move away from stand-alone technology courses (Karsenti and Grégoire 2015), or ‘one-shot workshops’ (Fullan 1993), and from disconnected training, towards the implementation of training activities that focus on the teachers' own projects and needs, that make explicit the pedagogical added value sought, and that take into account teachers' e-learning culture. The IntersTICES-Type Activity outlined in this paper might adequately support and guide teacher trainers during the process. This process encompasses steps for exploration, learning and utilization of ICT tools, as well as coaching for the production of pedagogical activities integrating ICT into their teaching practice.

For example, comprehension and application of the notion of the pedagogical added value (PAV) of technology progressing toward positive intentions and prospective action, requires pre-service teacher trainers to: (1) identify a need of their course/students they would like to address; (2) choose the pedagogical added value (PAV) they aim to achieve and; (3) meet with the researcher/trainer to reflect on and have a pedagogical discussion about every aspect conducive to its

implementation. This may be assured by putting into practice the identified steps suggested in the IntersTICES-Type Activity (See Table 2.2); following a more conscious process of reflection and analysis, facilitated by the Guidelines (Table 2.1), to start working with participant teacher trainers on the activity they chose; and being supported by the pedagogical engineering approach implemented, covering and interrelating the relevant conditions and actors (Villa 2016).

Accordingly, results suggest that it is important to help pre-service teacher trainers become aware of and understand the pedagogical added value (PAV) of technology (Villa 2016). This will allow them to make meaningful connections between technology and teaching. As such, this chapter provides a broader understanding of the dynamics leading to the acceptance and intention to (actually) use ICT tools by teacher trainers.

Technology skills alone cannot guarantee the effective use of technology in the classroom (Ertmer et al. 2003). As Dutt-Doner et al. (2005) noted “meaningful technology integration is more of a pedagogical endeavour than a technological one”.

Given the lack of understanding regarding the need of effective interventions that focus on teachers’ own projects and needs, make explicit the PAV sought, and take into account teachers’ e-learning culture to facilitate the type of training, this chapter may contribute to the solution of this problem by making available the different training intervention tools generated through Villa’s work: The IntersTICES-Type Activity; the guiding Principles; the Guidelines; the List of Facilitating Conditions/Constraints (Resources); as well as a proven effective procedure to be able to support the teacher trainers in a reflective practice about the pedagogical value of ICT during planning. These tools could be used as a reference to design proposals of training interventions to address teacher trainers’ needs regarding pedagogical integration of ICT, while helping them develop their e-learning culture, and embark on a critical, reflective and informed practice based on the seven indicators of PAV of ICT. This would empower and equip them to engage in the process with the required skills to effectively respond to societal demands to foster twenty-first century skills through their teaching practice.

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Chapter 3

Deconstructing Teacher Education: Technology and the Intern



Veena Kapur

Introduction

Globalization and its deep connection with technology have brought a palpable transformation in society, and the way we perceive knowledge and its transaction. Consequently, schools today stand at the cusp of change, preparing learners for rapid development, fostering in them abilities to construct knowledge creatively and in the process, transforming schools into hubs of opportunities. Translation of this concept means that teachers need to become catalysts, key agents who can bring a new continuously evolving society into being (Hargreaves 2003). Moreover, they need to adhere to constructivist approaches to learning and understanding, and utilize cooperative learning strategies, employ a wide range of assessment techniques, and help students use computer-based and other information technology to gain access to information independently. These strategies can empower learners to create knowledge, apply it to unfamiliar problems, and communicate effectively with others. Essentially, learning to teach or teaching to learn, in the present times, is technically more complex and wide ranging, since it draws on a base of research and experience about effective teaching that is always changing and expanding (Hargreaves 2003).

Today's teachers need to be continually engaged in pursuing, upgrading, and self-monitoring their teaching, and reviewing their professional learning so that their practice is always informed by it. They can no longer be complacent that, once they are qualified to teach, they are qualified to teach forever (Koehler and Mishra 2007). It is vital that teachers engage in action, inquiry and problem-solving together, in professional learning communities, whether real or virtual. Teachers, during the course of their education, must be helped to develop capacities for

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dealing with change and for undertaking inquiries when new demands and problems frequently confront them. They have to make their schools into learning organizations where capacities to learn and structures that support learning are widespread among the teachers as well as the learners (OECD 2016). Schools should have atmospheres that are stimulating for learning. In this way, schools will become effective learning organizations for teachers, administrators, and learners (Hargreaves 2003).

When we discuss the varied components of today's educational equation, it's important to understand the learner of today. This learner is already an active member of online communities, with access to a wealth of resources that extend beyond the bounds of their schools, and well beyond a single teacher's knowledge and skills. These learners will pursue careers in the world of today which is a knowledge economy that rewards teamwork, continuous learning, and innovation. Yet, teacher interns continue to be immersed in antiquated programmes that equip them to deliver primarily traditional, standalone, text-based instruction in self-contained classrooms. Moreover, the reports calling for reforms in teacher education only set higher and higher benchmarks for traditional teaching (Hargreaves 2003). Their recommendations fall short of the needs of digital learners as they are preparing teachers for obsolete jobs. Teachers need to be trained so that they are ready to work in the schools of the future. It is time to reinvent teacher education, for today's learners need teachers who have the knowledge and skill to facilitate participation in a collaborative, Web-based learning culture (Koehler and Mishra 2007; Hargreaves 2003). These teachers would be able to:

- facilitate and inspire student learning and creativity so that all students achieve in the global society
- enable students to maximize the potential of their formal and informal learning experiences
- facilitate learning in multiple modalities
- work as effective members of learning teams
- use the full range of digital learning tools to improve student engagement and achievement
- work with their students to co-create new learning opportunities
- be lifelong learners
- be global educators

In order to prepare teachers with the above characteristics it is essential to transform teacher education institutions into twenty-first century learning organizations, staffed by teachers and educators who are themselves imbued with the characteristics listed above. Psychology and neuroscience have compiled a sound body of knowledge about how people learn (Novak and Gowin 1984). Teacher educators need to integrate these and model research-based pedagogical practices throughout the pre-service teachers' academic instruction and field experiences. Moreover, collaborative, interdisciplinary, and inquiry-based learning projects will

provide teacher educators the opportunity, to foster in their interns the ability to use appropriate pedagogical strategies, coupled with effective technological tools (Koehler et al. 2007). In the digital world of today, it is important that teachers should be comfortable with and competent in using analytical tools in contemporary data systems, to better understand the needs and progress of their students, and to determine the most appropriate instructional responses. It is imperative to expose teacher interns to cutting-edge technologies, individualized pedagogical strategies, and advanced data systems. The new educational practices will enable them to work effectively in a rapidly evolving world, to shed outdated policies and strategies, and to embrace new and more effective approaches that address the needs of twenty-first century learners (Koehler and Mishra 2005).

Review of Related Literature

The importance of computational skills cannot be underestimated, especially in the world of today (DiSessa 2000). However, it's the quality of how technology is addressed in teacher education programmes that is one of the factors that impact the teacher intern's application of technology in schools after graduation (Tondeur et al. 2012). In most education programmes, scant attention is paid to the use of technology; neither how it can be used in secondary education nor as a support in pedagogy in education itself (Chien et al. 2012). The lack of attention to technology in education means that most learning of how to use technology in teaching is done after interns have graduated, if at all. However, merely increasing attention to technology in education is not enough; it is teaching how to use technology that is important. Sweeney and Drummond (2013) concluded that pre-service education should not only focus on how to use technology, but also on how it intersects with pedagogy and knowledge. Standalone technology courses are found to be ineffective in providing interns with appropriate preparation to successfully integrate technology into instruction (Karatas 2014; Polly et al. 2010), although standalone technology courses have continued to be part of many teacher education courses (Gronseth et al. 2010). Other researchers have written extensively about the value of integrating technology into pedagogy courses, to foster technology skills more connected to use in primary and secondary teaching, and for cognitive development of teacher interns (Messina and Tabone 2012). Standalone technology courses primarily focus on the development of technical knowledge and skills, and aim to equip teacher interns with a set of basic competencies they can transfer to their practice in the future. However, standalone courses may not provide the concurrent and authentic content and pedagogy that methods courses can supply. Mishra and Koehler (2006) have thus suggested that integration of technology requires teachers to not only have strong content, pedagogical, and technological knowledge, but also to seamlessly weave the knowledge bases together.

Hargreaves (2003) proposes that we should reshape the future of schooling as we are now living in a knowledge society. To teach here means to prepare learners for a

world of creativity and flexibility. He provides examples of schools which operate as creative and caring learning communities and shows how years of “soulless standardization” (45–66) have seriously undermined similar attempts made by many non-affluent schools. Hargreaves takes the critical reader beyond standardization, to a future where teaching is concentrated on high-skill, creative, life-shaping goals, as that is the focus of a knowledge society. The book critiques the role of the teacher in society while analysing how bureaucratisation impacts the teacher and the learner alike and how it can be reversed.

What makes teachers use technology in classrooms is an important area that needs to be carefully addressed. Baek et al. (2008) look at technology in classrooms in Korea. They emphasize that technology enhances classroom teaching, but that there are many obstacles that get in the way of teachers’ use of technology in the classroom. The researchers undertook an experiment to find out why teachers use technology. They found that teachers use technology not because it makes children learn effectively but because they are compelled to do so; the authorities insist on the incorporation of technology. In a study, Smith and Greene (2013) investigated the implementation of e-learning as a method of instruction, to help pre-service teachers evaluate and improve upon the implementation of their lesson plans in their real world practicum experiences. The results showed that participants reported improved lesson planning and transaction.

Other studies have found that, even with the inclusion of new technologies in the classroom, actual instructional strategies remain largely unchanged. Hofer and Swan (2006) found that teachers are hesitant to adopt a transformative view of technology where laptops are more than notebooks; and where presentations mean more than handwritten overheads. O’Mara and Laidlaw (2011) noted that the problem for teachers was not technologies but the methods used to implement them. Instead of using technologies to change curriculum, teachers continued their regular drill and practice even with iPad, iPod, smartboards, and applications; they used laptops only to supplement material.¹

Teacher education programmes struggle with selecting and implementing the most effective strategies on how to prepare interns to integrate technology in their classes in the future, even in industrialized societies. They have attempted to develop technology skills in interns through an introductory technology course (Polly et al. 2010). In a survey of 1439 institutions in the United States

¹A. Kirk, ‘Apple in the Classroom: Students using iPods, iPads to improve reading, maths.’ HJnews.com. 10 January 2011. https://news.hjnews.com/news/education/apple-in-the-classroom-students-using-ipods-ipads-to-improve/article_937f4736-1c7b-11e0-94f2-001cc4c03286.html; Ken Little, ‘Web School to require students in grades 4-12 to have iPads for teaching,’ *Knoxville News Sentinel*, 06 February 2011. <http://archive.knoxnews.com/business/webb-school-to-require-students-in-grades-4-12-to-have-ipads-for-learning-ep-406428445-358110541.html/>; Janet Steffenhagan, ‘No more pencils no more books: The Vancouver School has embraced iPads, iPods and apps,’ *The Vancouver Sun*, <http://www.vancouver sun.com/technology/photos+more+books+Vancouver+school+embraces+iPads/4106245/story.html>.

(Kleiner et al. 2007), 85% of the programmes reported having education technology courses ranging from one to four credits. By taking these courses, interns are expected to transfer knowledge and skills to their future classrooms (Brush et al. 2013). However, as stated earlier, interns do not feel prepared to effectively use technology in their classrooms (Drent and Meelissen 2008; Kay 2006). While it is important that interns learn the use of technology during the course of their education programme, it is more important that this learning should also incorporate how technology can be used for teaching and learning. In this respect, these teacher education programmes need to provide a wide range of approaches throughout their curriculum: podcasts, hands on technology skill building activities, practice with technology integration in the field, and electronic portfolios for learning technology-integrated reflection. Ertmer and Otterbriet-Leftwich (2010) have concluded that best practices for interns, with regard to technology-training, include authentic experiences in real life classrooms.

House (1979) argued that research on education and reform indicated that large-scale change can only happen when it is supported by the social and political milieu at a certain point in time of that particular nation. In addition, for educational innovations to succeed, they require the close collaboration of the teachers involved. Means (1994) has argued that the history of educational reform the world over has shown that innovations have failed dramatically when input from teachers was not incorporated, and when they were not actively involved in the innovation. The participation of teachers in the decision making process, as well as in the design, implementation, and evaluation of programmes relating to innovation, needs to be an integral part of decision making and design.

The Problem

The Indian economy post economic liberalisation of 1991 has experienced a great change due to major reforms, a rapid economic growth and foreign investments. There has also been a boom in the technology sector (Government of India 2013). It has seeped into the lives of the common man in India in many ways; from mobile technology, to learning software, we can see its evidence in all walks of life. Consequently, education in India is at a critical juncture. The changing trend in education demands technology-friendly teaching but our country is still struggling with decade-old problems, like out-of-school children, drop-outs, shortage of teachers, lack of infrastructure, balancing equality, excellence and a common standard curriculum (ASER, Pratham). Coupled with crushing poverty, social and political inequity, and the rural and urban divide, this has resulted in a vast chasm between the have and have-nots in terms of access to educational and professional opportunities. (NCAER 2013).

Given this background, it becomes highly challenging to even define the minimum criteria to meet the dream goal of Universalization of Education. The Right to

Education Act (RTE) in India came into effect in the year 2010, making education a fundamental right for every Indian child between the ages of 6 and 14 years. It's a forward-looking legislation that puts the responsibility of ensuring enrolment and attendance on the government. But, at the same time, the quality of education provided by the government is a matter of grave concern. These problems are further accentuated by student and teacher absenteeism, as well as teacher appointments and mismanagement of funds, a general malaise that afflicts Indian society as a whole (ASER, Pratham). Children attending government schools are seen to be at a disadvantage over their private-school-educated brethren, in terms of availability of appropriate infrastructure, latest teaching–learning resources, able and committed teachers, and a conducive learning environment (NCAER 2013). Private schools are attended by the children of economically and educationally privileged parents, who have the necessary monetary wherewithal to pay the exorbitant fees. It is evident that there is a vast disparity in Indian classrooms.

Government Initiatives

The Indian Government has shown a lot of interest in use of ICT in education. The National Policy on Education 1986, modified in 1992, stressed the need to employ educational technology to improve the quality of education. The policy statement led to two major centrally sponsored schemes—namely, Educational Technology (ET) and computer Literacy and Studies in Schools (CLASS)—paving the way for a more comprehensive and centrally sponsored scheme. Information and Communication Technology in Schools, in 2004, was launched to provide opportunities to secondary stage students, in order to develop ICT skills in students, facilitating ICT-aided learning. The use of ICT for quality improvement also figures in the Government's programme *Sarv Shiksha Abhiyan*. The Government of India sees ICT as a great enabler in education that can bridge the gap between the urban and rural education sectors, and help in tackling the issue of access and quality in Indian education. The Government has, therefore, tried to introduce many initiatives to improve IT infrastructure and promote the use of ICT in school education. While the National Curriculum Framework, 2005, highlighted the importance of ICT in school education, The National Mission on Education through ICT (2008–9) had a vision of catering to the learning needs of more than 500 million Indians, providing a one-stop solution to all the needs of the learning community. A budget allocation of just over 5 billion rupees had been made in 2008–9, for the National Mission on Education through ICT. The Central Board of Secondary Education (CBSE) had planned to do away with the 'chalk-and-talk' method of teaching, and had also recommended online labs to its schools for helping students understand experiments better. Setting up of Language and Maths labs has received a major allocation in the budgets of CBSE and Kendriya Vidyalayas

(Central Government Schools). With the National Policy on Information and Communication technology in School Education (2012) emphasizing the increasing use of ICT for the betterment of education, the Union budget allocation for education for 2013–14 had shown an increase by 53.2% to 3.4 billion rupees. The estimate is that it should grow five times by 2020.

The Government initiatives and planning is tremendous considering India's economic status. Then why don't we see results? The effort to expand educational access is severely constrained by the lack of suitably qualified, appropriately trained teachers in adequate numbers (Planning Commission 2011). There are half a million teaching vacancies in government schools in the country and another half a million teachers are required to meet the RTE norms on pupil–teacher ratio. One of the biggest challenges is the resistance from teachers themselves. The usage of ICT resources depends on the teachers, who are neither trained in its use, nor exposed to using computers, let alone ICT-enabled resources. The role of the teacher is of paramount importance in this regard, as it is through the use of technology and technology-integrated teaching that the classroom can be completely transformed. Unfortunately, they are unfamiliar with these tools. Teacher education needs to be redesigned to meet the new age challenges. Moreover, internet access, as well as availability of digital labs, is very limited in India. Only 5–10% of Indian schools have access to technology; in many cases computers are lying untouched because of lack of proper infrastructure, and a paucity of motivated teachers who are trained in the use of technology. IT initiatives in Indian schools are more the exception than the rule, unlike the West, where IT seamlessly transforms systems and takes the processes, products, and transactions to the next level of excellence.

Teacher Education

It is important to keep in mind the status of India as an emerging economy, and to have an understanding of the problems the country faces because of poverty and the teeming millions of school-going children who need quality education. Teacher education needs to be reviewed in the context of India's problems and the interface with a technologically advanced world, and to be geared towards it. Teacher educators and interns need to inculcate a professionalism that keeps them abreast of new technologies and strategies, while committing them to continuous professional learning.

Unfortunately, Teacher Education programs in India are not creating teachers who are aligned to the needs and trends of the technological age. These teachers are trained in antiquated programmes that equip them to teach text-based instruction in traditional, standalone classrooms. A major shift in pedagogical approaches that integrates technology with pedagogy is needed.

Objective

- To study the status of Technology in Teacher Education Programmes in India, in the programmes of B. Ed. and B. El. Ed.
- To study how far Teacher Education programmes are able to cope with the demand of aligning to the needs of a Digital Society.

The teacher educators of the two courses, Bachelor of Education (B. Ed.) and Bachelor of Elementary Education (B. El. Ed.), that comprise the sample are of the age-group twenty-five to sixty years. They are experienced in transacting the courses and the ground realities that they face in that process. B. Ed is a two-year programme in which interns are trained to teach secondary and senior secondary school learners. The interns themselves are either graduates or post graduates in a school teaching subject. B. El. Ed. is a four-year course and the interns are school graduates. In the discussion and analysis, as in the preceding discussion, the students of teacher programmes will be referred to as interns rather than pre-service teachers; this is their nomenclature in these programmes.

Deconstructing

The sample size of the study was of 32 teacher educators teaching B. Ed. and B. El. Ed. Their teaching experience ranged from two years to thirty years. The sample was delimited to the capital of India, Delhi, since it is representative of the diverse Indian population. The tool used was that of the structured questionnaire with 19 questions. The questions were sent online, through Google forms, to the teachers who were interested in participating in the study. The questionnaire was supplemented with informal interviews with the respondents, in order to clarify doubts regarding their responses. The important themes that emerged from the analysis of the data are: the availability and integration of technology, collaboration with interns, teacher educators and practicing teachers, and the road ahead.

The Availability and Integration of Technology

The integration of technology with teacher education, and across the various pedagogy courses within the programme, is crucial for fostering effective learning in the interns. Research has shown that a critical factor influencing interns' adoption of technology is the quality and quantity of internship technology experience included in their teacher education programmes (Agyei and Voogt 2011). While research findings suggest that teachers do not feel prepared to use technology in their classrooms because of insufficient access to technology (Dawson 2008), lack of time (Wepner et al. 2003), and lack of technology skills (Teo 2009). These factors

do contribute to a lack of technology integration since the availability of technology is not enough to adequately prepare interns to successfully integrate technology into their future classrooms. To prepare them for effective integration of technology in teaching, teacher education programmes need to help interns in building knowledge of good pedagogical practices, technical skills and content knowledge, as well as developing insights into how these concepts relate to one another (Koehler and Mishra 2009). Some of the ways of integrating technology with the learning process are: project based activities incorporating technology, learning with mobile and hand held devices, using interactive whiteboards, podcasts, collaborative online tools like wiki, Google Docs, to list a few. The seamless integration of technology assumes that it is employed daily in the classroom, using a variety of tools to complete assignments and projects, displaying a deep understanding of content. The student, then, becomes more engaged in changing classroom dynamics, and encouraging learner-centred project-based learning.

Computer-mediated education facilitates educational approaches which focus on ‘knowledge building’ rather than ‘knowledge transmission’. Knowledge building occurs when learners interact with their peers, collaborate, discuss their ideas, form arguments, and negotiate meaning. Technology, if used appropriately, provides the right context in which the learner can be in control of the learning environment and become an active constructor of knowledge, while working on authentic tasks. The role of the teacher educator, in this context, shifts from that of knowledge transmitter to that of a facilitator who provides opportunities for interaction and creation of meaning making to the learners. This shift in focus is extremely beneficial to learning.

In the teacher education programmes that we have included in our sample, technology is not an integral part of the programmes. A clear pattern emerges (Fig. 3.1) indicating that teacher education programs incorporate technology-enabled methods, in addition to traditional methods, while educating their interns, but the detailed discussion with the respondents reveals that the technological

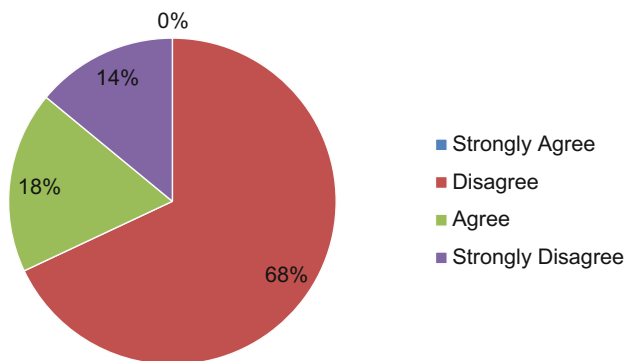


Fig. 3.1 The incorporation of strategies of both the digital and analogue classroom has a positive impact in teacher education programmes

strategies are neither original nor innovative, but are limited to showing of video clips and power points.

Discussion and collaboration is at the heart of a robust teacher education programme. This is one characteristic of professional development that contributes to sustained positive results while creating opportunities for the participants to collaborate, with colleagues discussing student thinking and learning. It facilitates building strategies and techniques that incorporate practical inputs, and can be implemented immediately, while providing space for planning changes in current teacher practice. This is an aspect that can be relevant for practicing teachers and teacher interns. The only space available, in the investigated teacher education programs, for discussion with peers or teacher educators is within tutorials. Though teacher educators encourage discussion in classes and tutorials, and reflections on pedagogy visits to schools, these discussions and reflections are not comprehensive enough, nor are they situated in practical experience. Moreover, the teacher educators themselves are not conversant with the skills of collaboration and discussion.

Theoretical understanding of technology needs to be suitably embedded in practice rather than being presented as isolated content (such as how to use specific software); it is essential that conceptual or theoretical information should be linked to practice so that interns can understand the reason behind using ICT (Brush et al. 2013; Jang 2008). There is an urgent need for redesigning teacher education to foster understanding and insights into methods of integrating technology with pedagogy. Figure 3.2 clearly highlights that teacher education programs don't provide space to the interns to understand technology and its integration with teaching pedagogies.

The preceding discussion brings out, in stark relief, the importance of space within the program for understanding and learning to integrate technology. Significantly, there is no module for teaching the use of technology or creating original material within B. Ed. and B. El. Ed. There is an inherent paucity of efforts, in these programmes, to align teacher education to the needs and trends of the digital age. But the question is: what is the reason of 38% response in favour of using technology (see Fig. 3.2). A careful perusal of the responses in the Google

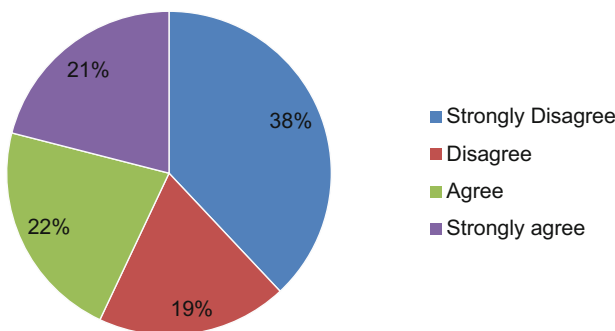


Fig. 3.2 Interns design and create technology-driven teaching learning environments

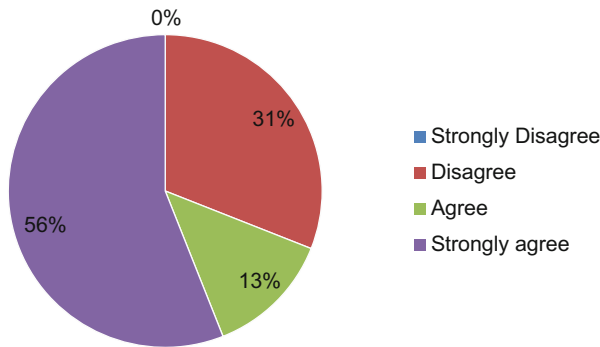


Fig. 3.3 Interns learn to use limited resources to integrate technology with teaching

forms, and discussion with individual respondents, shows that the marked tilt towards use of technology was a result of the passionate initiative of individual teachers. For example, using video clips and movies to enhance teaching, or for schema activation, is prevalent. Power point presentations are also used by interns and teacher educators. Though nothing original is created by the educators or interns but even these minimal initiatives are a result of personal passion. Figure 3.3 again supports the argument above.

The standalone approach for learning technology is used in most teacher education programmes even today, though the idea is fundamentally flawed. Teacher preparation should not be based on training for computer literacy but should prepare interns for using technologies to construct, represent, and share knowledge in real-life, authentic contexts. Interns need to be taught not about technology but how to use it in real-life classroom situations for constructing, organizing, and communicating knowledge (Barron and Goldman 1994). The best way to learn how to use a computer is while working on an authentic and meaningful task. The B. Ed. curriculum was implemented in 2015 with a technology module. But it does not provide redesigned interns with an understanding of various media, their affordances, and their constraints. Such understandings can only emerge when technology is integrated with teaching and learning across various disciplines. Figure 3.4 shows a marked negative tilt, indicating clearly that understanding and using technology is not a part of these teacher education programmes, either in strategy or content, nor is there space within these programmes where interns can work with practicing teachers to determine which technology driven strategies are feasible in real classrooms.

Cuban (1986) and Means (1994) had observed that viewing the history of technology-use in education reveals that the first inclination is to use new technology in the same traditional way as the old technology. Continuing old practices with new technology will neither change nor improve education. Old curricula and pedagogical practices should be reformed and, if necessary, replaced, to take advantage of the myriad of possibilities available with new media. More importantly, theoretical understanding of technology needs to be suitably embedded in

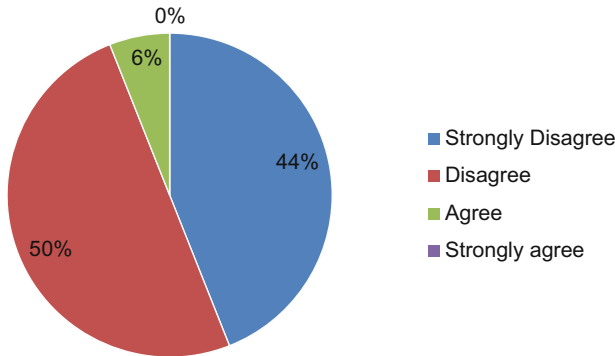


Fig. 3.4 Teaching strategies are in alignment with the demands of a digitalized society

practice rather than being presented as isolated content (for example, how to use specific software) so that interns can understand the reason behind using it (Brush et al. 2013; Jang 2008). There is an urgent need for redesigning teacher education. The growth of interns depends on seeing and experiencing pedagogical intervention of technology in the real life classroom (if not, then at least through videos vignettes). Observing good examples and being able to implement such practices themselves is an enriching experience for the intern. Koehler and Mishra (2009) suggest that the opportunity to redesign technology-enhanced curriculum materials is a promising strategy for teacher interns.

Collaboration of Interns with Teacher Educators and Practicing Teachers

Effective learning is the result of construction, collaboration, reflection, and negotiation within the rich context in which it is situated (Brown et al. 1989). Studies have shown that collaborating and sharing concerns with peers and working in groups was important as it helped in picking up things and sharing expertise (Barton and Haydn 2006). Moreover, there needs to be room for getting input from peers while helping each other, as this added to the quality of experience (Brush et al. 2013). According to Angeli and Valanides (2009) collaboration with peers appeared to provide a time-effective, highly challenging and least-threatening learning environment for the interns, contrary to many technology-learning experiences that can induce anxiety and failure avoidance. Technology has the potential to be used for active, authentic, and cooperative learning activities.

The discussion above clearly indicates that there is a decided lack of collaborative efforts and opportunity for working in blended environments. In fact, space needs to be created within the ambit of teacher education programmes to foster

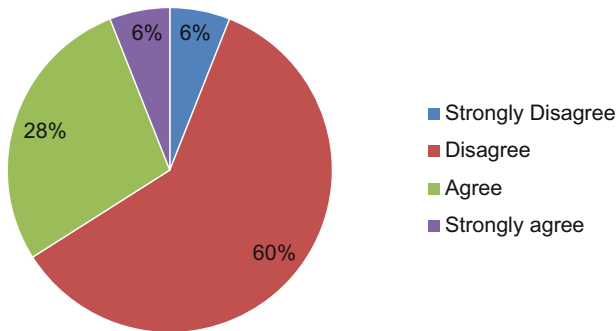


Fig. 3.5 Interactive platforms are used in teacher education programmes

learning and collaboration using technology. Moreover, along with collaborative experiences, it is also important that interns get opportunities to apply their knowledge in authentic settings (Cuckle and Clarke 2002; Tearle and Golder 2008). An analysis of the two programmes, and through discussions with the respondents, it became evident these programmes have a standalone course on Technology use in B. Ed. There is no platform for collaboration or creating interactive platforms with peers, teacher educators, and school teachers. Figure 3.5 shows an overwhelming tilt towards negative responses.

Respondents have said that their program has no space to:

- use computers for creating material for teaching
- allow teachers educators and interns to work together to evaluate material available on the internet, and
- create interactive platforms through technology.

Collaborating and discussing with each other would prove beneficial for interns, teacher educators, and practicing teachers alike, for it reinforces learning, and improves performance, pedagogy, and practice. The school teachers have not been prepared during their college years for integrating technology in teaching but they are well aware of ground realities that may hinder integration with teaching. Buying computers and software for schools and connecting them to the Internet does not automatically imply effective use of technology. Both the interns and teachers need to be trained in its usage in real life situations. Having access to video vignettes, of teachers using technology in teaching, provides a rich context for teachers to develop an understanding of appropriate teaching pedagogies. Such a multimedia approach provides all teachers and interns a common and rich context for discussion, much richer than textual descriptions of settings. In addition, interns and teachers in schools can listen to the teachers shown in vignettes and reflect on their practice. Teacher education programmes can thus prepare interns to integrate technology in teaching. Curriculum, pedagogical, and policy reforms are essential for success in this regard. To effectively integrate technology in teaching, interns

need to be well prepared to use it in pedagogy. While in-service teachers need to deepen their knowledge and skills, they also need time to develop, master, and reflect on technology-based learning approaches.

The Road Ahead

Learning to teach with technology is a systematic process (Seels et al. 2003) that requires the engagement of interns in investigating role models, designing lesson plans, practicing in authentic settings, collaborating with peers and teachers, providing feedback, reflection. Furthermore, effective preparation for technology integration needs to be infused as a systemic aspect throughout the entire programme rather presented in standalone technology modules (Strudler et al. 2003). Technology needs to be infused in the entire programme so that interns can understand the rationale for using technology. Otherwise, the knowledge and the skills interns gain from standalone courses are likely to remain isolated and unused. Research has shown that teachers tend to teach the way they were taught (Ball 1990; Lortie 1975). Therefore, if we expect interns to integrate technology with their teaching strategies, it needs to be an integral part of teacher education, and while there is an urgent need to use technological strategies to teach them. The teacher education programmes need to demonstrate an effective use of technology in teaching varied subjects to the interns. It's essential to organize collaborative and creative technology strategy planning sessions to increase the learning experience of both interns and teacher educators. In a course on educational technology for interns, the goal should not be simply to teach the use of several technology systems; instead, it should be to provide interns with opportunities to think like experts in making instructional choices, selecting media for appropriate use, structuring learning activities, and employing sound pedagogical strategies in real life contexts.

Changing the philosophical and pedagogical assumptions of education, requires time, effort and strong will of educators and stakeholders in education. They need to unite their efforts for development of educational reforms. There is a deep need for skilled personnel, to develop, implement, and evaluate educational technology programmes in teacher education. There are always obstacles to attempts at educational reform: the resistance to change that is deeply rooted in education systems, and the fear of technology dominating our lives, are forces that can withhold change. However, technology can help reform education with successful technology integration. If we believe teachers are the primary agents of change, then a good place to start is by reforming our teacher education programmes to better prepare our interns to take cognizance of various technologies and successfully integrate them in their practice.

Conclusion

The careful study and analysis of the responses to the questionnaire clearly indicates that there is an urgent need to create space within the prescribed curriculum of Teacher Education courses in India. The rationale behind creating this learning space, is that interns can learn how to use technology and how to create original teaching learning material to be used in the classroom with such use.

Understanding the principle of technology use can help broaden the minds of the teacher and teacher educator, leading to the possibility of eliminating rote learning and drill, and creating room for creative discourse between teacher educator and intern, to be followed by similar interaction and learning between teacher and learner in the school classroom. Technology needs to be taught through workshops, collaboration, and interaction, which will help foster practical transaction of technology. It is not theory that has to be understood and learnt, but the confidence, to tinker with and tweak technology and customize it for individual needs, which has to be inculcated. More importantly, teachers and teacher educators need to understand that the journey of integrating technology with pedagogy is not a Utopian dream nor is it child's play. A teacher needs to weave a detailed plan with technology-integrated strategies; using technology without appreciating its nuances will not yield viable results. Administrators need to understand the imperatives of technologies, while initiating changes in education. This environment will facilitate the evolution of the digital immigrant learner into a digital native (Prensky 2001). This is a prerequisite if we want learning to be effective, and learners to become efficient citizens.

India may be a cash-strapped nation, but that does not take away from the fact that teacher education needs to be aligned to the needs and trends of the technological age. Traditional text-based classrooms are not preparing learners with open and receptive thinking which is essential for a nation's progress. We do have access to technology in India. But it will only remain a statistic, if the citizens who can use it don't have an open and flexible mind. Socially conscious Indian corporates, like the Tatas and innovators, like Sugata Mitra, are showing the way in which technology can be integrated in our lives followed by education, thus opening the minds of our young citizens to embrace, in the words of Aldous Huxley, "... The Brave New World".

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Chapter 4

Technology Integration in Language Teaching: A Negotiated Terrain



Nidhi Seth

Introduction

In the globalized world of today, regions and countries and their people have come closer at an unprecedented scale. This is made possible, in part, by technology enabling instantaneous exchanges of information. However, just as globalization has been said to have increased the economic divide, it has also had the same effect in the digital domain: those with access to the internet have an advantage over those who do not, in terms of access to information. The present chapter seeks to study technology-integrated language teaching in the context of a pre-service teacher education programme in India.

Educational institutions are entrusted with the responsibility of transferring to the next generation, the changes brought by Globalization. They have the responsibility of striking the right balance between tradition and modernity; preparing for the new, while preserving the old. It is a tightrope walk, one where the stakeholders need to come to a consensus not just over the content to be taught but also how it is to be taught. One such decision is related to the use of technology in education. Purists (including many among the administration, parents, and teachers) might argue in favour of the traditional methods, but that would mean turning a blind eye to possibilities of innovation offered by technology. We are living in a world where the traditional sources of knowledge and information prove to be inadequate in the face of curious minds in the classroom. The changing scenario demands innovation in transaction of content and knowledge. This change can be brought about with the help of technology.

Prensky (2001) notes that students changed radically over the decades, and the traditional education system was ill-equipped to teach them. He coins the term

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‘digital natives’ for the generation that came after the 1980s, signifying a generation of people who have grown up surrounded with technology and feel comfortable about it. These people prefer to multi task and network using technology. On the other side are the ‘digital immigrants’, people “who were not born into the digital world but have, at some point in our lives become fascinated by and adopted many or most aspects of the new technology.” (1–2) For Prensky, students are digital natives, while most teachers are ‘digital immigrants’ unwilling and inept to constructively use technology in the classroom. One must note, though, that Prensky’s categories have been contested for being age-based (Kuehn 2012).

The current chapter, sidestepping the issue of age, posits that, it is the younger novice teachers who find themselves at a loss when confronted with the expectation of using technology early in their careers. While the younger generation teachers maybe ‘digital natives’ in their daily lives, technology integration in the classroom is independent of technology use in personal life. Bang & Luft (as cited in Cetin-Berber and Erdem 2015) write that teachers, young or old, use technology efficiently in their everyday lives but that doesn’t translate into effective technology integration in their instruction to improve teaching and learning.

Technology Integration in Language Teaching: A Negotiated Terrain

The focal point of this chapter is technology integration in language teaching. Language teaching, especially second language teaching, in Indian schools typically has one teacher with over thirty learners all going through the same course books, workbooks, and literature readers. There are separate periods assigned for grammar teaching, and for improving writing skills of students. Thus, all the students are provided with the same content and there is hardly any scope for differentiated instruction. The teacher is the only instructor providing language input and is the go-to person in case of any queries that may arise. In such a situation, technology can prove to be the right support for teachers in the language classroom.

Technology can prove to be a *motivating* factor for learning in a language classroom, especially the second language classroom. The use of technology removes the need for constant human support in learning a second language (which may not even be possible in big classes). Students can play games, perform exercises, and undertake tasks using the target language, which is a boon especially for those who like spending time on the computer.

Multimedia and web-based exercises are interactive in nature. They provide voice inputs and support which traditional pen and paper exercises lack. One can listen from, or speak into the digital devices in order to check listening and speaking skills and pronunciation. Sound effects, and motivational messages upon completion of tasks, contribute to the enjoyment derived while fulfilling the language learning requirements of students.

Web based learning can be self-paced and arranged according to one's liking. Students can choose the nature of tasks to perform and practice a task as many times as they like, or until they attain perfection in it, and then proceed to tougher tasks. Immediate feedback and one to one engagement with the tasks are made possible by technology based learning. Since technologically mediated materials can be accessed from anywhere, learning isn't limited to the confines of the classroom. Flexibility for both teachers and learners means freedom to post and access materials at their own pace. For students it can turn into invaluable support outside the classroom. The use of current news, cartoons, videos and other authentic material, freely available on the internet, adds a dimension of immediacy to the class proceedings. (Sharma and Barrett 2011, 10–12)

With all of the above, one mustn't assume that teachers welcome technology in the classroom. Technology, rather, is one such medium which evokes quite negative responses from language teachers. Technology, especially messaging applications, like SMS and Whatsapp, are held to be responsible for the deteriorating language skills of students, as well as their reduced attention span. Successful integration of technology into teaching depends on simultaneously transforming teachers' beliefs and philosophies.

It shouldn't be assumed that the chapter in any manner advocates that technology-mediated resources should rank above or replace the teacher in the classroom. Rather, the chapter posits that properly planned inclusion of technology can synchronize well with the teacher's teaching in a classroom. Despite the benefits, technology integration in language teaching remains a negotiated terrain to be traversed by administrators, teachers, and learners alike. Infrastructure support, attitude towards technology, technological content, and pedagogic knowledge required for technology integration, and volume and quality of teacher training organized to teach the same, are some of the factors effecting the acceptance of technology integration in the language classroom. Apprehensions regarding the reliability of technology, and criticism of technologically mediated exercises as behavioural tasks, serve as a deterrent for the teachers to accept technology integration. The chapter seeks to explore these factors, and their dynamic interplay within the contextual premises of pre-service teacher education, and their reverberations in in-service teaching which provide lessons for teacher education.

The Realm of Teacher Education

Established in 1994, the B. El. Ed. programme focuses on preparing teachers committed to innovation in education. Besides providing a strong theoretical base through a variety of Foundation and Pedagogy courses, the programme also offers several Practicum courses aimed at developing understanding through actual fieldwork. In the third year of the programme, there is a course component called Material Development and Evaluation, wherein the students focus on preparing materials for teaching different subjects. Materials for language teaching usually

include things such as flashcards, worksheets, language games, story-boards, and the like. However, in the past few years, teachers and students have also started scouting for, and developing, A/V materials that could be utilized in an elementary school language classroom. This material development practicum works in tandem with Block teaching in the third year and lays the foundation for the School Internship programme of fourth year. I would like to highlight here that the programme itself doesn't have design or evaluation of tech materials as part of the materials development course. Whatever anecdotes about the use of technology are shared here are the result of passionate interest of respective teachers and students.

This chapter will look at the ways in which B. El. Ed. interns use technology for language teaching, and make a case for the inclusion of educational technology in teacher education programmes. In the upcoming sections, the researcher will explicate the ways in which technology is utilized by B. El. Ed. interns in elementary school classrooms, with examples. The examples are drawn from my own classroom supervisions and lesson plan discussions in the past few years and also from 32 B. El. Ed. students and alumni, who responded to a questionnaire which was sent to them by email. The chapter focuses upon exploring the pre-service and in-service experiences of technology integration in language teaching of the respondents. The pre-service experience will include both experience as a student and as an intern.

Mishra and Koehler (2006) have worked upon Shulman's framework on Pedagogical Content Knowledge to include technological knowledge and the interrelations between them, which is today called TPACK (formerly TPCK). They are of the view that issues related to technology integration are increasingly becoming foregrounded in teacher education and it is important to address them. The relationship between content, pedagogy, and technology is complex and nuanced; technology cannot be viewed in isolation from the other two. Since success in teaching depends upon the complex interplay of the three, "...learning environments that allow students and teachers to explore technologies in relationship to subject matter in authentic contexts are often most useful" (Mishra and Koehler 2006, 1045). Thus, teacher educators and curriculum developers cannot afford to have a disconnect between technology training and the rest of the teacher education programme. According to NCERT's *National Curriculum Framework for Teacher Education, 2009*, "ICT can be imaginatively drawn upon for professional development and academic support of the pre-service and in-service teachers." (14). The B. El. Ed programme doesn't have a module dedicated to technology. The focus of the programme and the learning environment that it provides is also not oriented towards teaching interns integration of technology with pedagogy. Whatever attempts that are evident during the transaction of the course are made as a result of an individual teacher who is passionate about the issue.

Understanding the Negotiated Terrain

For the purpose of this study, an online survey was conducted with teachers about their pre-service and in-service experiences regarding the use of ICT. This survey was conducted using Google forms. The pre-service experience focused upon whether their own teachers used ICT in the classroom or not, and whether they themselves used ICT or not, as interns in schools. There were 32 respondents to this survey, out of whom 22 were private school teachers and 10 were government school teachers. Only two teachers were middle school teachers, while the rest were primary school teachers. Their teaching experience ranged from a year to ten years. The survey was followed up with telephonic interviews for anecdotal data and to seek clarifications. Some of the anecdotes are from my own records as a pedagogy advisor and internship supervisor.

The study threw up some interesting results about the use of ICT in language classrooms, both as part of internship in preservice teacher education programmes and as in-service teachers. The pre-service programmes are focused upon educating interns in the theory and praxis of teaching. All the respondents in this study had undergone the Bachelors of Elementary Education programme (B. El. Ed.) at different points in time from different colleges affiliated with University of Delhi.

The data collected for the chapter is analysed in four strands: availability, utilization, challenges, and the way ahead. Technology integration, though welcome, is dependent upon the availability of technology. For interns it is important to encounter technology use in their own experience as a student to be able to prepare technology integrated plan on their own. Utilization is also the key. Technology maybe available but it can be used to simply replace the paper and pen without serving any pedagogical or curricular concern. Therefore, the extent of technology use needs to be analysed in terms of the purposes it is used for. 'The Way Ahead' focuses upon suggestions to improve the teacher education programmes in order to equip new interns for technology integrated teaching.

Availability of Technology

Teacher Education Institutions

Focusing upon the interns' pre-service experience meant beginning with the question of availability of technological facilities. Most of the respondents, when asked about the availability of technological facilities in colleges, for the teachers, said that there were some basic facilities available in colleges, such as projectors in the classroom with which laptops could be connected, to show videos and power point presentations. While a few respondents said that there was a complete lack of facilities, a few others said that there was a smart board allotted to their department. Interestingly, these respondents belonged to the same institution, but had an almost

ten-year difference in the times they pursued the programme. It is important to note here that institutions have recognized the importance of using technology in teaching and have tried to fulfil infrastructural requirements with regards to making technology available in the classrooms.

The availability of technology doesn't guarantee its use by the teachers. Pre-service teachers' actions are determined by what their teacher educators do. Research shows that a crucial factor influencing new teachers' adoption of technology is the quantity and quality of pre-service technology experiences included in their teacher education programmes (Agyei and Voogt 2011; Drent and Meelissen 2008 as cited in Tondeur et al. 2012). Therefore, the next logical step was to inquire whether the teacher educators themselves used the available technology or not.

The survey results indicated that 50% respondents said that teachers used technology occasionally, while another 19% voted said that technology use by teachers exceeded occasional usage.

Internship Schools and In-Service Schools

The students of the B. El. Ed. programme usually undertake their internships in government schools which do not have infrastructural facilities equal to what the private schools have. Most of the students reported that there were very few computers in the school computer lab which were available to the teachers. In many cases, the computers were not functional, or, in other cases, were hardly used. Interns had to obtain special permission in order to use those computers for teaching purposes. In some cases, there were projectors that were not functional. One respondent reported that the school had a smartboard but only for its own teachers to use while the interns were absolutely denied its use. They had to carry their own laptops and speakers for use. The schools didn't expect the interns to use the facilities for teaching students. The only expectation from the interns was course completion through traditional chalk and talk method.

The in-service schools, on the other hand, had better technological facilities available. Most of the schools had at least one projector and one computer available in the classroom; there were others which used special software from private companies. Many reported that they had smart classes equipped with smartboards with modules. One of the respondents had the experience of teaching in an international school where Promethean boards (a variety of smartboards) and webcasts and podcasts were also used. Students had access to iPads in schools. If we compare the two scenarios, it is clear that the interns, while being denied basic technological facilities in internship schools, were expected to utilize them in their real-life teaching experience. Only 2 out of 32 respondents reported that they used technology very frequently or in their internship (again more than the frequency it is the purpose which matters) while 11 had the same to say for their in-service experience. 15 respondents said that they hardly ever used technology during their

internship. However, all the in-service teachers utilize technology at varying degrees of frequency.

Utilization of Technology

Teacher Education Institutions

However, frequency of use is an insufficient indicator of the extent of incorporation of technology in the classroom. A query regarding the purposes of technology use yielded the following results.

As the results suggest (Fig. 4.1), an overwhelming number of respondents reported that the two most popular uses of technology by teacher educators is to present power points, and show documentaries and films related to the course. Power points are necessarily teacher directed and are a one-way form of communication which is used by teachers mainly to ensure a smooth transaction of the information during the lecture time. Videos and films, while breaking the monotony of the classroom, provides teachers an opportunity to use films as case-in-points or as reference points in order to discuss critical issues in the field of education.

The respondents also shared that films were used in the class to flag and discuss social issues in relation to education. Sometimes classroom-based videos were also used to discuss classroom management issues. While the teachers brought several films to the classroom, ‘YouTube’ was reported as the most popular resource for other educational videos. The language teachers teaching the ‘Storytelling and Children’s Literature Colloquium’ in B. El. Ed. were reported as using ‘YouTube’ for showing different forms of storytelling to students. YouTube videos allowed the teachers to show performers, and forms of storytelling which they couldn’t do otherwise. The added advantage was that videos could be paused and played back to discuss nuances of expression, and the like.

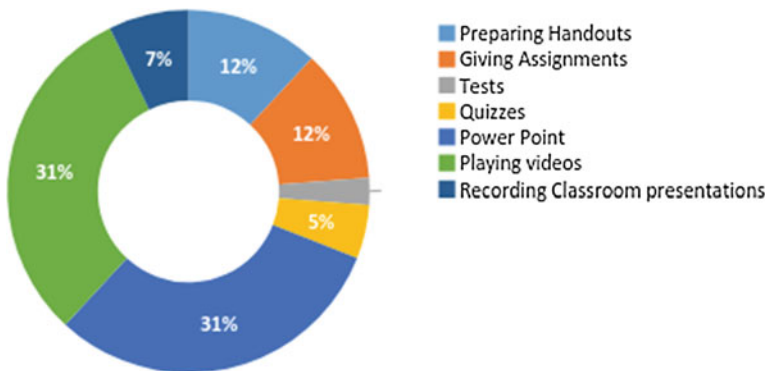


Fig. 4.1 Purposes for which teacher educators use technology

A few respondents also reported that their teachers also recorded some classroom presentations. These were usually storytelling and theatre performances. These recordings served to discuss the strengths and weaknesses of their performance and helped improve their performance the next time since the interns got a chance to observe themselves in the videos. Preparing handouts and giving assignments figured next on the list. Respondents reported that teachers sometimes sent pictures of a handwritten assignment or typed and mailed or messaged it. At times, some teachers also gave typed handouts. Quizzes followed by tests figured lowest on the list. It seems that the teachers preferred the traditional paper–pencil tests, to use of online tests. From the data above it is clear, that much of technology use is teacher-directed in the class room, and is limited to power points and videos for the most part.

Technology can do plenty to revolutionize learning outside the classroom. Participants reported how teachers sent readings over Google groups, shared links to blogs, videos, and the like. Google docs were used to get feedback on projects. Some of the teachers also shared links to websites, forums, and Massive Open Online Courses (MOOCs) from where the students could pursue online courses. A respondent shared that her teacher (educator) used the ‘Jeopardy’ game for quizzes and taught her class how to make one. Another respondent shared that her teacher (educator) taught the class to use the GeoGebra software online. It is a dynamic mathematics software which deals with algebra, calculus, and geometry. One can enter variables for coordinates and equations and also do constructions with points, segments, vectors, and much more. It is important to note that, in both the cases, the teacher educators had to overcome the impediment of lack of infrastructural facilities by requesting access to the college computer to conduct a class or by requesting the interns to bring their laptops. Since there is usually no access to Wi-Fi for students in educational institutions, the few available laptops were run on mobile data as interns worked in groups. Primarily, it is the “bring your own computers” approach which makes technology integration possible even in some of the higher education institutions.

Technology thus supplemented regular classroom teaching in the form of preparation for the class or use of power points and videos. Beyond the classroom, technology was used by the teachers to disseminate information. Since smartphones are now widely in use, interns use them for reading soft copies of articles and books and for searching other relevant reading materials. However, in no way did this extend to creation of virtual learning environments or the practice of flipped classrooms. According to the respondents, part of the problem lies in lack of access. While interns have budget smartphones, requirements of blended learning demand access to computers and good internet facilities which they don’t have.

Internship and In-Service Experience

Since meaningful utilization is the key to integrating technology in teaching, it is essential that we compare how the interns overcame the challenge of lack of

infrastructural facilities during internship to utilize technology and how did they utilize technology during their service.

From Figs. 4.2 and 4.3 it is clear that the respondents did utilize technology both as part of their internship experience and in-service experience. Lesson planning and materials development are crucial to successful teaching. The Internet has opened up a plethora of possibilities and nobody is any longer tied down to boundaries of time or space. Websites can be accessed at any point of time from any location, and knowledge generated in one part of the world can be easily accessed in other part of the world. Handouts and worksheets, too, can be prepared in advance in the comfort of home while using computers. As opposed to preparation, the actual transaction of technology integrated teaching requires infrastructural facilities which may or may not be available.

Use of Internet for Researching and Preparing Lesson Plans and Materials

The internet has a plethora of information available and a teacher scouting for something would be practically inundated with a number of sources at one click of the mouse. The classroom transaction is contingent upon the availability of infrastructure in schools or the ability of the intern/teacher to make her own arrangements. However, lesson planning and preparation of materials is done beforehand and the internet has proved to be a boon for the same. A few years back

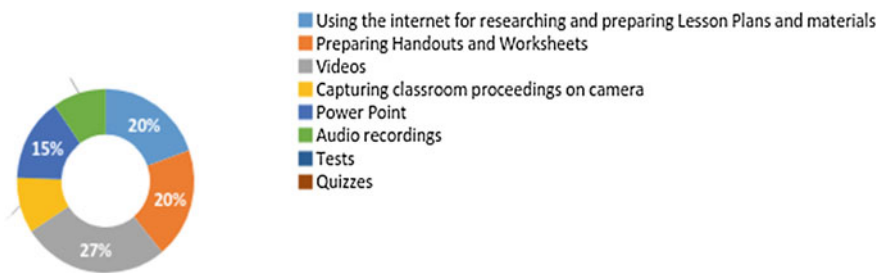


Fig. 4.2 Purposes for which technology was used during internship

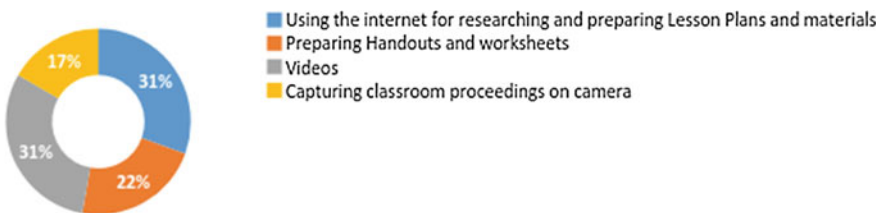


Fig. 4.3 Purposes for which technology was used in in-service teaching

one of the B. El. Ed. interns, took up the theme ‘Dinosaurs’ with Class 6 students. She synthesized and edited information from three to four different websites to create a coherent expository text on dinosaurs. She also showed the class a video on dinosaurs—on her laptop in the Resource Room—and conducted several post activities on the same.

Another student successfully utilized blogs as part of English language teaching. She reported “While teaching English to Class 8, I used the story of Malala, and also blogs written by her to introduce the idea of diary writing. The objective behind using blogs was to give an exposure of writings where in people pen down their personal thoughts and feelings. Since Malala was almost of their age, the students were fascinated by the events in her life and took an immediate liking towards her. In fact, one of the student had even shared a cut-out of an article in a newspaper about Malala during the class. This was followed up with a writing activity by the students who wrote one diary entry of their most special day. The lesson plan was concluded with a sharing of the same by everyone.”

The above two anecdotes are from my ex-students who were interns in government schools which had restricted access to whatever limited technological facilities they had. I would like to highlight the motivation that these interns had for exploring the information highway (internet) and drafting a text in accordance with the language proficiency levels of their students. They used technology for creating materials. The second intern also used the e-text of Charles Dickens’ *A Christmas Carol* (1843) in order to create a text suitable for reading by her students.

Use of Video Resources

In the present study, when it came to actual classroom transaction, videos emerged as the most popular resource for language teaching in the classroom, followed by power points and audio resources. Let’s explore the use of these resources one by one, beginning with video resources. Television and films have become an important part of our daily lives. With the growing access to internet, more and more people are watching videos on websites and sharing them on social media. YouTube is perhaps the largest provider of videos that can easily be accessed and downloaded for playback.

There are plenty of authentic materials, including videos, available on the internet. Authentic materials, in the context of language teaching, are the materials which are originally not prepared for teaching purposes but come to be used so. A creative language teacher can select an authentic video for teaching language. However, since these videos tend to be too fast, have unfamiliar accents, and too much idiomatic language, a judicious decision, in consonance with the needs of ones students, has to be made. The teacher can choose to get the students to practice with specially produced A/V materials and then move on to authentic materials.

Sherman (2003, 2–3) has provided six reasons for the inclusion of videos in language classrooms. They are:

- For its own sake
- For comprehension of the spoken language
- As a language model
- For culture
- As a stimulus or input
- As a moving picture book

B. El. Ed. students utilize videos for most of the reasons stated above. Some of the activities that they implemented in their classes are as follows:

Watch and Talk: The activity discussed below was planned for teaching English in Class 2 of an MCD school. The activity was aimed at developing spoken English language skills in children and to develop prediction skills. The activity was executed as part of the theme ‘Cleanliness’.

As part of the preparation, a short video, with not more than two characters and a clear sequence of events, was selected. The video in this case had two dustbins speaking to each other; while one belonged to the home, the other was situated on a street. The visuals were simple and made the context clear. The students were briefed that they would be watching a video without dialogues and then they would have to guess the conversation and perform it in the class. The video was played on mute and the learners were asked to watch it carefully. Once the students have watched the video, they were asked to explain what it was about and also try to enact the scene with the dialogues in English, for which appropriate vocabulary was supplied by the teacher.

Watch and Write: Videos also offer an opportunity for developing writing skills. This can happen in a variety of ways. One of the plans I observed in an ESL class for Class 6 students involved showing students a part of the animated film ‘Madagascar’ (Soria et al. 2005). This 2005 film is about four animals who escape from the Central Park Zoo in New York. As they land up at Grand Central Station, mayhem is caused among the commuters. Alex, the lion tries to communicate with the police officers who arrive on the scene but his attempts are mistaken for aggression and all the animals are sedated with tranquilizer darts. Subsequently, the animals are shipped off to a Kenyan reserve.

The video was stopped here and the students were asked to imagine themselves to be one of the commuters at the Grand Central Station who witnessed the entire scene. They are then asked to write about their ‘experience.’ The activity was a good exercise of letting elementary-level students practice writing in the first person, and drew upon their fascination for the film. The task engaged the students well, although there were demands from some quarters to watch the entire film before getting down to work.

Watch and Write the Story: With younger learners who need practice in writing but are hesitant to write on their own, videos can provide an interesting stimulus. *Panchatantra* stories are quite short and have many animated versions available in the market. Many times, interns played one of these stories and then provide differentiated instructions for the post activity to the students. Integrating the reading and writing skills, the interns provided a summary sheet of the story

with gaps which the students have to fill in on the basis of what they viewed. The more advanced learners who are adept at writing are asked to write the entire story in their own words. The teacher may extend help as and when required.

‘Same Language Subtitling’ or SLS has proved to have had a positive impact on beginning readers. Many B. El. Ed. interns scouted for websites that had suitable videos with SLS and found www.bookbox.com where Indian stories with SLS could be downloaded and shown in the class. One of the respondents in the study used the website quite extensively. She informed that repeated playing of the videos proved to be useful. While the students concentrated more on the pictures during the first playback, during the second playback they focused on the subtitles and tried to read the text. At times, during the second playback, there were students who demanded that the video be paused as they wanted to “read” the subtitles on their own. Many a times, just as in the case of narration from story books, interns paused the videos and asked the students to predict the story; at other times, the students were asked to extend the story that they have just watched.

Videos for Teaching Poetry and Content Area Texts: Many B. El. Ed. interns find videos particularly useful while teaching expository texts and themes. One of the B. El. Ed. interns took up the theme ‘disaster management’ with Class 4 students. She used videos of the cyclonic storm Phailin from websites, along with pamphlets on disaster management. She reported that, having watched the videos, the students could comprehend the pamphlets in English quite well. Not just content area reading but videos have proved to be useful in teaching poetry also. As reported by an intern “Once, I was dealing with a poem on the theme nature. I showed them a related video before I dealt with the poem. In a class of 5th graders, all of whom were second language learners, it may seem like an inappropriate choice. But since the video had beautiful pictures, subtitles and sounds like buzz of insects and chirping of birds, the piece was really brought to life. Some of the students looked at the word ‘cricket’ and said ‘but there is no bat here.’ Then, they realized that the insect ‘cricket’ was being referred to.” In this case the video didn’t just bring the text alive but also resulted in vocabulary development and comprehension among children.

As part of in-service teaching too, the teachers utilize videos for language teaching. Some of the responses shared by the respondents are as follows:

With respect to numerous concepts, I have used audio visual aids to introduce, or reinforce, the concepts being dealt with in the classroom. For example, recently after conducting a noun walk and a mental journey of a place on nouns and discussing, we watched a video of a similar situation of a park in which a young child identified the nouns and so did the students side by side.

The best experience of technological advancement that I have used so far in my classroom was when I introduced adverbs to the kids. This is a topic that is not very easy to understand. Audio-visual modules served amazingly to clarify the concept and also helped me as a teacher to better understand the complexities.

(I have) used commercial education modules and videos to teach adjectives. Students could relate to it and identified the usage in their regular vocabulary. Was a fun filled and interactive class.

Through continuous playing of songs and poems in the classroom, the students have acquired different correct sentence structures and vocabulary which they utilize in their speech and writing. Our PPTs for introducing new vocabulary words for clothes, accessories, phrasal verbs, etc. have helped children acquire the meanings through a variety of contexts.

The anecdotes indicated that, though the interns had less access to technological materials during internship, they exhibited more innovation in adapting materials. When it came to in-service teaching, the teachers had access to better infrastructure but not everyone reported that they made innovative use of the same. Follow up interviews with some of the respondents revealed that since the schools subscribed to commercially prepared modules targeting towards grammar teaching, they were used in the classroom. As for literature teaching, most of the private publishers were coming up with their own digital resource packs. The pressure of completing syllabus on time also prevented the teachers from using technology in the classroom while lack of resources prevented others from technology integration in the classroom. This is not to say that the interns stopped being innovative once they became teachers. Selecting the modules to be done with children, worksheets to be given in class and at home, hands on tasks that students could do individually or collectively and material to be printed for display in the classroom all require adeptness at TPACK in different measures which both pre- service and in- service teachers display.

Use of Audio Resources

The use of audio for language teaching isn't new. However, the use of mobile as an audio source surely is. Mobile apps have captured the interests of the interns for their pedagogic values. One of the respondents shared: "I had once downloaded the voice clippings of animals. These were played one by one in the classroom as a schema activation activity wherein learners had to name the animals before we began a story." Another one reported: "I used a mobile application for the sounds of animals to prepare a story in my language class. I made my students close their eyes so that it works well. It actually did. Those sounds worked as a stimulus and *activated their schemas* which further helped in prediction and anticipation which are vital in a language classroom." (Emphasis mine) There is an interesting anecdote from one of the English classes I observed in a government school. The intern had to teach a story from the NCERT textbook, which was an excerpt from R. K. Narayan's *Swami and Friends*. Before she began with the text, the intern wished to remind the students of the tele-serial *Malgudi Days* (Narayan and Nag 1987) to bring into play students' *previous knowledge* about the novelist's writings. (Italics mine) However, when the name of the series didn't ring a bell in the students' minds, she resorted to playing the title music of the series on her mobile phone and found that the students immediately recognized the series. Although

there was no particular language skill which was focused upon here, the mobile proved to be an easy and handy tool for the intern to activate the students' schema. The schema theory in education states that knowledge is organized as units in the mind and new learning is made possible either by bringing to mind a schema that accounts for it, or by changing the schema to accommodate new information. Here, the interns were incorporating the use of technology as part of their application of schema theory to the classroom.

Mobile phones are usually not welcome in Indian classrooms. We tend to see them as potential sources of distraction. However, mobile phones provide immense opportunities for learning, especially language-learning, to take place. While built-in apps provide ready access to dictionary and thesaurus (along with pronunciation in many cases), other apps allow note taking, story narrations, and recording facilities. More than half of the respondents reported that, while the use of technology fascinated the students, it helped reduce the teacher's on-task responsibilities when they "substituted" the mobile phone for other tools. For example, many interns recorded stories they wished to narrate in the classroom in their own voices, which left them free to move about in the class to show the pictures rather than worrying about the tone, intonation, pitch and pronunciation, the usual requirements of storytelling. A group of students utilized the mobile phone to record animal sounds. They took up the story *Nanhe Singh Ne Dahadna Seekha* (Rana 2000) and presented it as a shadow story using stick puppets. Their use of recorded authentic sounds of animals and laser lights (for fire shots) increased the enjoyment of the students. The group further planned to record the entire story in their voices so that they could heighten the production value of their shadow story.

Challenges Faced in Technology Integration

The use of technology mediated resources in the language classroom is fraught with challenges. Beginning with the lack of infrastructural facilities, to lack of administrative support, to disciplinary issues, to problems of using technology in huge classes, to lack of teacher motivation—the list of impediments to successful technology integration is endless. The respondents in the survey mentioned that, as interns, they were on the lowest rung of the hierarchy in schools, and were denied access to basic technological facilities. "Classroom management issues", "distraction for the students", "incompatibility of audio/video input with the software in computers", "pressure to finish syllabus on time" were some of their complaints as in-service teachers. While all the respondents viewed the use of technology positively (83.3% respondents felt that technology use added value to a language class), they also felt that there was some downside to the increased presence of technology in our lives. For example, one of the respondents felt that sometimes students get over excited and lose sight of the purpose of the activity. Another one said that

encouraging students to read a novel is taxing because the availability of technology ensures that students end up watching the film at home and don't bother to read the book.

The responses above can be categorized as challenges occurring on account of administrative pressures, learners' interest, or the lack of it, logistical issues with the use of technology, and the like. However, the most important factor in technology integration is teacher preparedness. Most of the respondents stated that the scant attention paid to technology integration in pre-service teacher education programmes leaves them unprepared to adapt to technology use in school immediately, where it is used extensively for pedagogical activities, as well as for assessment, and administrative tasks such as attendance and maintaining profiles of students. They stated that, while they were usually not expected to make use of technology during internship, in-service training demanded adeptness at technology; this where they felt that their course could've equipped them better.

The Way Ahead

Respondents in the survey suggested some measures that could help them become adept at the use of technology in the classroom. They wished to be kept abreast of the latest technology (smart boards, latest software, and related applications), wished to be trained in technological content knowledge (TCK) by means of workshops on technology use, especially software, and trained in technological pedagogic knowledge (TPACK), by means of sessions on integrating the use of technology with language teaching and teaching of other subjects. Research has shown that it is critical to arrange for explicit instruction about the technology available, preferably in relation to their curriculum specializations (Sweeney and Drummond 2013). Respondents also demanded more hands-on practice within their pre-service programme. They suggested online submissions and collaborative activities and tasks requiring the use of technology.

What is required from teacher trainers and course designers is the motivation to keep abreast with the advances in the field of technology and identify its implications for the field of language education. Most importantly, the component of technology must become a part of all pre-service teacher education programmes including B. El. Ed. Ad hoc attempts at the same, though well-intentioned, fall short of fulfilling their potential in the face of lack of logistical support, which can only be made available once the component of technology is added to the course. We also need to ensure that the technology component has a hands-on aspect. It should require the interns to not only explore and document the available A/V resources, websites, and software but also utilize the same for development of materials for a language classroom.

There are several websites on the internet that can be of particular use to language teachers at school. While there are several websites dedicated to English language teaching and provide forums for ESL teachers and students to interact, there are some websites which can be used to generate materials for classroom use. For example, www.puzzlemaker.com is a website that allows you to create several types of puzzles such as word search, crosswords, cryptograms, and mazes. By entering the required vocabulary items in the word-search maker, you can have a word-search worksheet ready in jiffy. Students can also create puzzles for each other. Teachers can get ideas from fellow teachers on areas of classroom management and pedagogy of various subjects from websites such as www.teachin-gideas.co.uk. Websites such as these also offer printable resources which can easily be adapted for the Indian classroom. For interested parents and teachers there are many audio resources available in the market. For example, *Karadi Tales* markets audio books of *Panchtantra* and other stories in the voices of several well-known celebrities. Similarly, *Pratham Books* offers several of its stories as audio recordings on its Sound Cloud page. Besides the novelty of listening to a recorded voice, the books have original background scores that engage the students well. www.twinkl.co.uk was suggested as a useful website by a respondent, for audio-visual aids, printables, and contextual PowerPoint presentations. However, the downside is that the website doesn't permit free access. The above were just a few examples of the resources available on the internet. However, there are many more options available for teachers and teacher educators, which may include training in making videos and editing them, or utilizing complex software and even interactive whiteboards if the institution has enough resources.

The anecdotes above are a testimony of the ingenuity of the faculty and students of the B. El. Ed. programmes. It demonstrates the awareness and willingness of teacher educators and interns for technology integrated teaching. Their efforts have resulted in web-enhanced teaching-learning taking place in the classroom. However, what is required is a change in the curriculum so that future teachers are able to not just use technology to 'enhance' classroom teaching but 'transform' it. The transformation can happen when students became active participants and teachers are able to design structured tasks that require individual or collaborative efforts to manipulate technology for learning and not just perform simple response based exercises.

Conclusion

The chapter focuses on how technology integrated teaching is the need of the hour. There is still a massive digital divide in our country and it can't be bridged all at once. It is up to the pre-service teacher education programmes to bridge the existing void by equipping future teachers with the skills to make the most of the

available technology. It is not just the availability but appropriate utilization of technology which marks its success and also the success of the teacher. However, it isn't only the pre-service teacher education programmes that need to include educational technology components. In-service teachers too, as outlined in NCFTE 2009 above, need to be brought abreast with the changes in the world of technology as there are many new software and programs entering the market or the web space which have pedagogical value. Hence, refresher courses for professional development with a thrust on educational technology are important.

The chapter, thus, makes a case for the inclusion of technology in teacher education programmes to not only facilitate the learning of student teachers but also equip them with the know-how of utilizing technology for teaching in the school classrooms, especially language classrooms. However, as NCFTE 2009 suggests (14), the use of technology in schools should neither be done in a cosmetic manner nor be an instrument for replacing teachers. Technology should thus be meaningfully integrated into classroom teaching.

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Part II
The New Age Classroom and Its Teaching
Strategies

Chapter 5

Engaging the Student: Redesigning Classrooms for Project-Based Learning



Sujata Sriram

Engaging the Student: Redesigning Classrooms for Project-Based Learning

Classrooms in India rarely depart from the traditional didactic mode, with emphasis on lectures from teachers to students. Learning is centred on the teacher, rather than being focused on the student or the learner. The role of the student is passive, rather than active. Teachers depend on prepared material, which is then transacted in conventional ways in the classroom. Expectations from students are few: pay attention to the teacher and to the material, answer questions when asked, and attempt the examination. In the context of the twenty-first century, the requirements from students are changing. In order to meet the challenges of the real world, strategies additional to those acquired in the conventional classroom are necessary. Project-Based Learning (PBL) has demonstrated that the outcomes of learning using the project mode are far greater than learning using traditional strategies. There have been successful programmes using elements of PBL that have been implemented in India in government schools. However, such programmes have not percolated through to be used in primary schools across the country. Teacher development programmes place little emphasis on equipping teachers with instructional methods that allow them to actively engage students. The dependence on singular examination systems, and marks or grades as a means of assessing acquisition of knowledge, puts further constraints on the creativity of the teacher and the classroom.

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The Need for Project-Based Learning

The efficacy of Project-Based Learning (PBL) comes from research in the fields of cognitive science, psychology, sociology and other sciences, which refutes the conventional methods of learning as being suitable for the knowledge economy of the twenty-first century. In order to succeed in the twenty-first century, skills such as communication, collaboration, creativity, and critical thinking are required (Bell 2010; Binkley et al. 2012).

Data from the ‘Acquisition and Training of 21st Century Skills’ (ACT21s) project in Australia divides skills required for learners to succeed in the twenty-first century into four groups: ways of thinking, ways of working, tools for working, and living in the world. These four groupings have ten skills required for learners to succeed. Ways of thinking requires creativity and innovation, critical thinking, problem solving, decision making, and learning to learn and metacognition. The second grouping of ways of working lays emphasis on communication, and collaboration (teamwork). The third grouping refers to tools for working, which necessitates information literacy and ICT literacy. The last grouping relates with living in the world, with emphasis on citizenship: local and global, life and career, and personal and social responsibility, including cultural awareness and competence (Binkley et al. 2012). In order to impart the twenty-first century skills, there have to be changes made in learning outcomes, pedagogy, teacher requirements, and attitudes. PBL can be seen as a possible method of equipping the twenty-first century student to face the world (Sawyer 2014; Bell 2010).

The project-based approach to learning is not new. It was first introduced by philosopher/educationist John Dewey who extolled the virtues of experiential, student-directed, hands-on learning. Project-Based learning (PBL) employs a perspective that allows for self-learning, a move away from the traditional transmission based models. The emphasis in PBL shifts from teacher-centric models of learning to student or learner-centric models (Sawyer 2014). School classrooms require changes in the way in instruction is transacted, teachers are prepared and trained, assessment is carried out, and multiple other things, if they are to use PBL effectively. It is in this context that PBL acquires importance, as it has the potential to create memorable impressions, thereby contributing to learning that sticks. Project-Based learning is one of the best ways of acquiring the skills necessary for the knowledge economy (Krauss and Boss 2013; Bell 2010; Krajcik and Shin 2014).

Evidence on the effectiveness of PBL comes from multiples sources and countries, including India. Holm (2011) presents a review of research on Project-Based learning across countries, in preschool, primary, and secondary school classrooms. The paper analyzes data from 15 papers on PBL, published between 2000 and 2011, from countries as diverse as Turkey, Israel, Qatar, Hong Kong, and the United States of America. Data has indicated that PBL is an effective strategy for content learning, along with information technology skills and inter-actional abilities, as compared to traditional lecture-based pedagogy. Students

reportedly engaged better with the content using PBL. Increase in language ability and concept development can also be attributed to it. The review illustrated problems identified by teachers in implementing PBL, the changes that would be required in the way in which information was transacted, the planning that would be required, and the assessment methods that would have to be employed. Teacher reluctance was attributed to limited student learning and poor effectiveness of PBL. Teacher factors, along with systemic elements of the educational system, hampered by poor infrastructure and limited funds, contributed to ineffective implementation of PBL (Holm 2011). Studies from Turkey, Hungary, Greece, and the United Kingdom have demonstrated the positive effects of PBL in the classroom (Kaldi et al. 2011; Redfern 2015; Habok and Nagy 2016; Endowment Education Foundation 2017). In India, research from the Hoshangabad Science Teaching Project, and from the Homi Bhabha Centre for Science Education provide data about how PBL was implemented (Mukund 1988; Natarajan 2014).

There have been multiple ways in which project-based learning has been defined. According to Krauss and Boss (2013) “In project-based learning, students gain important knowledge, skills and dispositions by investigating open-ended questions to ‘make meaning’ that they transmit in purposeful ways” (Krauss and Boss 2013, 5).

Characteristics of Project-Based Learning

In PBL, the emphasis is on the learning; as a result, the teacher is the facilitator of the learning, who designs, directs and guides the project, and learns alongside the students. The projects are the curriculum through which students learn concepts. PBL encourages questions from students; questions activate learning and curiosity, with the right questions spurring on further queries, and fuelling inquiry. Learning is important and unique for each learner, projects encourage higher order learning and metacognition: theorizing, investigating, analyzing, creating, and drawing unique conclusions (Krauss and Boss 2013; Bell 2010; Krajcik and Shin 2014).

According to Krajcik and Blumenfeld (2006), PBL builds on four major learning sciences ideas: active construction, situated learning, social interaction, and cognitive tools.

Active Construction: PBL is based on the assumption that understanding is deeper if learning is actively constructed. Passive instruction that happens in a traditional classroom, through lecture and direct transmission methods, leads to learning that is superficial. Understanding requires continuous construction and reconstruction of information and ideas. PBL encourages learners to develop understanding by actively engaging in the world, solving problems, and creating artefacts (Krajcik and Blumenfeld 2006; Bell 2010).

Situated Learning: Research has shown that learning is most impactful if it is situated in contexts that are meaningful for the learner. Situated learning allows students to see the value and meaning of what they are learning. Situated learning

allows for greater generalization of data to problems; it allows students to form connections between what they know already and new information, in order to develop greater conceptual understanding (Krajcik and Blumenfeld 2006; Bell 2010; Shome et al. 2011).

Social Interaction: The best learning results from learning in a social environment. Project-based learning emphasizes collaborative learning, where learners take roles, and become accountable to the project as a whole. Collaborative learning will be discussed at length in further sections of this chapter. The importance and benefits of collaborative learning have been written about by multiple authors (Krauss and Boss 2013; Bell 2010; Krajcik and Blumenfeld 2006; Redfern 2015; Shome et al. 2011).

Cognitive Tools: Krajcik and Blumenfeld (2006) emphasize the role of cognitive tools in PBL. They refer specifically to cognitive tools such as computer software and other technologies that help learners visualize and organize information, access and collect a range of material, help analyze data in a scientific manner, and, most importantly, allow for collaboration and sharing of information, through mechanisms such as the internet and video-conferencing.

Project-Based learning needs to be differentiated from two instructional approaches which adopt similar active methods of transacting information in the classroom. These are ‘thematic learning’ and ‘problem-based learning’.

Thematic Learning: There are many common features between thematic learning and PBL. They are both organized around a common theme and encourage long term learning. However thematic approaches focus more on end products, as compared to the process of learning, which is the emphasis in PBL. Thematic learning is often about doing a project, which is the end-product, rather than having the project as the curriculum itself, as suggested by Krauss and Boss (2013). Further differences relate to control, rigour, relevance, and enduring understanding. Thematic learning is usually teacher centric, unlike PBL, which is learner centric. In the former, the teacher selects the theme, decides what needs to be done, and students follow. In PBL, it is assumed that students have more control; they are allowed to decide what they learn, how they learn, and how they express what they have learned. The teacher plays the role of a facilitator, scaffolding learning in both forms, with a more direct instructive role in thematic learning as compared to PBL (Krauss and Boss 2013).

Problem-Based Learning: Problem-based learning has often been referred to as the other PBL. Problem-based learning was first used in medical school, and then extended to high school classrooms, especially for teaching science. Problem-based learning educates by presenting students with a situation, which leads to a problem, for which a solution was required. All problems did not have a single right answer. Students learned by trying to solve the problem; following a process of interpreting and then reinterpreting the problem, collecting information as required, creating possible solutions, generating options, and presenting conclusions. Problem-based learning is based on Dewey’s principle of allowing teachers to help students develop their natural instinct to create and investigate, while helping learning to be

based around real-life situations and issues, allowing learning to extend from the classroom to the outside real world (Delisle 1997).

Both problem-based learning and project-based learning start from an open-ended scenario, requiring learners to assess information, and arrive at a possible solution, which is tried, examined, and revised if necessary. In problem-based learning, there is one desirable solution, the routes to arriving at the solution may vary. In project-based learning, the outcomes are more diffuse. The products and the processes are many, as a result of the interdisciplinary nature of project-based approaches, in contrast to problem-based approaches, which tend to be associated with sciences and mathematics (Krauss and Boss 2013).

Traditional transmission-based education does not necessarily allow students to formulate problems or questions for themselves; facts and solutions are handed over to students, by teachers and instructors, without allowing them a chance to ask their own questions, or develop their own. The shift from teacher-centric to learner-centric classrooms is at the heart of PBL.

The Learner-Centric Classroom

According to Donovan and Bransford (2005) learner centric classrooms require teachers to pay attention to students' background, abilities, and cultural values. Teachers need to pay attention to the starting point and progress of the learning. The emphasis is on the process of learning, rather than on the amount, and the outcomes of learning, which is based on the dialectics between teacher and the learners; the progress of the lesson is determined by the student, rather than the teacher. There has to be a presentation of tasks of the right amount of difficulty, which are manageable, with enough complexity to maintain engagement, but not too much to discourage. In learner-centric classrooms, students have experiences that support the concepts that are being taught, but need instruction to bring these to the forefront. Practice is needed to work on a new concept, so that preconceptions can change, and old ways of thinking can be overturned (Donovan and Bransford 2005; Krauss and Boss 2013; Marzano et al. 2001).

The Role of the Teacher in a Learner-Centric Classroom

The effectiveness of PBL is determined by the teacher. The teacher plays the role of a facilitator, who scaffolds student learning, as someone who is a more knowledgeable other, who is available for clarifying doubts, and providing alternatives. This scaffolding can be done through helping design projects, by providing necessary inputs and feedback during the process, providing continuous assessment, and, most importantly, helping students relate what they are learning in the project to the real-world. Teachers need to know the core concepts of the discipline being

taught. If students have to understand what the subject is about, the teacher who is helping to design the project needs to have clarity about the core concepts of the field.

Student engagement is a by-product of successful, effective teaching. Student engagement can happen with good teaching plans, encouraging students to think critically, allowing them to take responsibility over their learning, and providing a balance between challenge and support. In order to successfully engage with students in the classroom, teachers should encourage questioning, should provide constructive feedback, and provide spaces for working together and being active. Being able to structure student groups, so that discussion is effective and ongoing, is often necessary. Personal characteristics of being purposeful, competitive, emotive, and connected to real life, having a sense of humour, and being able to maintain pace and energy in the classroom are all factors that help teachers keep students engaged (Redfern 2015; Willingham 2009; Kawalkar and Vijapurkar 2013).

Multiple techniques can be used by teachers for increasing student engagement in the classroom. Methods such as games, quizzes, role plays, performance, and the like, have been used successfully in the classroom, fostering engagement and learning. However, many of these methods require planning on the part of the teacher, preparation time, selection of material and processes which challenge the students, and using existing knowledge as a scaffold to develop new skills and knowledge bases. The teacher plays the role of coalescing the knowledge from groups of learners into a whole, further integrating the information developed with the already existing pool of evidence. This process of bringing together material is integral to the success of PBL. The need to identify experts in the field who can be called upon to support the project and the students is yet another requirement.

In PBL, the teacher plays a fundamental part in improving metacognitive skills of students and helping the performance of all learners, especially the under-performing ones. Group discussions, in small clusters, which could be teacher- or student-led helps students monitor the process and progress of their own learning. By observing and questioning what they are doing, individually, and in a group, students begin to monitor and question their own thinking. The analysis of what is being done, with what end in mind, along with a debate about alternative approaches to the problem, helps in development of the metacognitive abilities. The ongoing discussion about alternatives, and the reasoning behind the same needs to be communicated for the loop to be completed.

In order for effective learning to take place, the discussion needs to be guided and directed by the teacher or facilitator. This requires teachers having the skill to guide a discussion effectively, respond to the direction it is taking, and steer it effectively, so that focus is not lost. Students need to be guided and encouraged to ask questions meaningfully, related to the content of the information being discussed, rather than ask questions for the sake of asking. Sometimes, in group discussions, there may be some students who dominate the discussion, asking questions repeatedly, while others do not participate. The teacher can step in and

direct the discussion so that all participants get a turn in the dialogue and have space for their viewpoints to be expressed.

Metacognitive function in the group can be encouraged by allowing individuals to pause and write individually about what was happening in the group, and then share. Self-monitoring and evaluation of performance helps in increasing metacognition, allowing for reflection about processes. Reflective assessment about performance from the beginning of the exercise to the end also helps in developing metacognitive skills (Donovan and Bransford 2005).

Implementing Project-Based Learning

When schools and teachers implement PBL in the classroom, it is important to identify the goals of students learning. Identifying the goals helps determine the outcomes of the project, which can be used for assessment, to decide what results have been achieved, and what remains to be attained (Patton 2012; Krauss and Boss 2013). Teachers can identify everything that they expect students to learn, from doing the project. This could include all kinds of things: knowledge of course-specific content, ‘generic’ skills like working in teams and critiquing drafts, specialist skills (which could range from statistical analysis to gardening), and personal attributes such as self-confidence. Identifying all possible outcomes helps understand what ‘required’ content (such as national curriculum or state standards) the project can cover.

The first step in initiating PBL is to identify an essential or a driving question (Krajcik and Blumenfeld 2006; Patton 2012). The driving question is the pivot around which the project develops. Identifying an essential question, with which a project can commence is vital for engaging students and encouraging them to conduct serious research. Determining an essential question at the commencement of a project requires time, effort, and discussion with others, specifically experts in the field. What began as an essential question, at the beginning of the project, may change and evolve as the project develops. There are some important criteria for helping to identify a compelling driving question: It should be a question that people ask in the ‘real world’ which is contextual, important, and nontrivial. It should be a question that has no easy answer, and stretches students’ intellectual muscles. It should be a question that ignites students’ imaginations (Patton 2012, 38). Driving questions should be ethical; they should do no harm to individuals, organizations, or environments. Allowing students the space to discuss and get involved with the development of the project theme can result in greater learner engagement and involvement in the process and the final product. Teachers can scaffold the development of project questions and themes by encouraging discussion on issues, presenting preliminary research on the topic, and steering a discussion that can be developed into a project. Developing questions that are relevant to the context in which the learner is situated, succeeds in grounding the project in

local-level reality (Krauss and Boss 2013; Krajcik and Blumenfeld 2006; Redfern 2015).

Patton (2012) cites educationalist Adria Steinberg, who has developed a set of design principles for PBL, referred to as the ‘Six As’. According to Steinberg, projects need to be *Authentic*, should have *Academic rigour*, should emphasise *Academic learning* and *Active exploration*, should include *Adult relationships*, and have *Assessment* (Patton 2012; Krauss and Boss 2013; Lattimer and Riordan 2011). A brief discussion of these attributes is given below:

Authenticity: Projects should use a real world context, and emanate from a problem that has meaning to students. It should result in a product or performance that has personal and/or social value.

Academic rigour: Projects should address key learning standards, which could be national, local, or school specific. They should pose essential questions of relevance to the student, thereby developing habits of mind and work associated with academic and professional disciplines.

Applied learning: Ideally, projects should engage students in solving semi-structured problems. They should demand the skills expected in high-performance work organizations, where they will be expected to function. Projects require students to develop organizational and self-management skills required as ways of working and living.

Active exploration: Projects should extend beyond the classroom. They should connect to field-based investigations, community explorations, and work internships. PBL requires real investigations using a variety of methods, media, and sources.

Adult relationships: Projects should connect students with adult mentors and coaches from the wider community. They should expose students to adults with relevant expertise. Well-designed projects engage adults in the design and assessment of student projects.

Assessment: Projects should provide milestones/checkpoints and provide time for reflection for students and teachers. Moreover, they should result in exhibitions and performances, and be grounded in personal, school, and real-world standards of performance (Patton 2012, 40–41).

For implementing projects in the classroom, it helps if teachers have attempted the projects themselves. This hands-on experience about what is required by the student helps teachers identify the success or failure of the project, and the reasons for the possible failure if it occurs. Doing a dry-run helps teachers recognize where students can run into difficulty and help develop alternate plans. Often, time taken for completion of projects is not realistically estimated by teachers and instructors; attempting the project gives an idea about how long it will take for students to complete the same. As a part of planning projects, it is necessary for teachers to identify experts and other resources that can be brought into help with the completion of a project (Lattimer and Riordan 2011; Patton 2012; Krajcik and Shin 2014).

Unlike traditional classrooms, classrooms using PBL encourage students to explore essential questions using new ideas that they are learning over a sustained

period of time. Traditional classrooms use a cookie-cutter approach, standardizing learning, where the uniqueness of each learner is not recognized. They do not recognize or adapt to the needs of children who may learn in different ways.

Collaborative Learning

A key ingredient for effective PBL is collaboration. It is not enough to put students in groups with a task to complete. There is a tremendous amount of planning that is required in order to implement collaborative learning environments and helping students work collaboratively. Teachers have to help them develop skills of working in teams, listening to each other, learning to take turns, being patient, and learning to compromise. PBL provides opportunities for students, teachers, and members of society to collaborate with one another to investigate questions and ideas. The classroom becomes a community of learners, with students collaborating with others in their classroom, and with their teacher in asking questions, writing explanations, forming conclusions, making sense of information, discussing data, and presenting findings (Krajcik and Blumenfeld 2006; Redfern 2015; Krauss and Boss 2013).

Redfern (2015) identifies components of lessons that increase student participation. Effective lessons require students to be engaged and challenged in their work. The challenge needs to be such that it is not too great, or too little. Learning that happens in a social context takes place within groups, wherein they identify their personal responsibility and role, where there is collaboration between learners to allow them to bring together their learning.

Collaborative or cooperative learning refers to learning tasks or activities where students work together in groups small enough for everyone to participate on a collective task that has been clearly assigned. This can be either a joint task, where group members undertake different aspects of the task, and contribute to a common overall outcome, or a shared task, where group members work together towards a defined, common goal. Some collaborative learning approaches also get mixed-ability teams or groups to work in competition with each other, in order to drive more effective collaboration.

The impact of collaborative approaches on learning is consistently positive. The greatest learning-gains through collaborative learning come from structured approaches with well-designed tasks, where group members are clear about what is expected from each of them, and how they will contribute to the whole. While collaboration can be supported with competition between groups, it can lead to learners focusing on the competition, rather than the learning it aims to support. Situations where interaction between the learners is encouraged tend to result in the best learning outcomes. Collaboration works well for all ages if the activities are suitably structured for learners' capabilities. It is particularly important to encourage lower-achieving pupils to talk and articulate their thinking in collaborative tasks as

they may contribute less (Endowment Education Foundation 2017; Redfern 2015; Krajcik and Blumenfeld 2006).

Collaborative learning works best for enquiry, idea generation, and problem solving. This is a good way to prepare for real life, by allowing engagement collaboratively with real-life problems and arriving at possible collective ways for dealing with the same. Collaborative learning can help students develop skills of leadership, communication, and teamwork. For collaborative or cooperative learning to be effective, some important elements have been identified. The first is positive interdependence; the belief that a group can succeed only when everyone works together, where everyone has a role to play, and a contribution to make, on which others rely. Second, individual and group accountability is required, indicating that group members have an identity as an assemblage, and recognize that they are accountable for the success or failure of the group as a whole. Lastly, there is a sense of community, wherein learners see themselves as being part of a learning community to which they belong, and contribute. Learning can happen in different groups, separate from their usual friendship groups (Redfern 2015; Marzano et al. 2001). Using a classroom to shift from acquiring knowledge to making sense of an issue is important in classrooms focusing on engagement.

Project-Based Learning in India

The 2005 National Curriculum Framework (NCF) in India recognized the importance of PBL. The NCF document, speaks of “connecting knowledge to life outside the school, ensuring that learning is shifted away from rote methods, enriching the curriculum to provide for overall development of children rather than remain textbook centric” (5). However, the NCF takes a limited view of projects, where they are seen as add-ons to the curriculum rather than being the curriculum itself, as identified by experts in PBL from the United Kingdom and USA where PBL has been practiced from the beginning of the twenty-first century (Krajcik and Shin 2014; Krauss and Boss 2013).

The NCF provides guidelines for educationists to implement constructivist pedagogy for connecting learning inside and outside the classroom, also suggesting that teachers conduct projects in science and environment education, and recommends the structuring of classroom learning around challenging problems or activities, and encouraging student participation in designing the activity. The aim of the exercise should be to foster self and peer assessment (NCERT 2005; Shome and Natarajan 2013). Much of the work on constructivist pedagogies in the teaching of science and environmental studies in India originates from the Hoshangabad Science Teaching Project (HSTP) Madhya Pradesh, and the Homi Bhabha Centre for Science and Education (HBCSE), Mumbai. The studies from the HSTP and HBCSE have informed teacher education models and professional teacher development. Apart from the lessons from these, there are multiple scattered examples of

PBL in India, primarily in elite schools for the wealthy, and rarely in government and government-aided schools catering to the masses.

The Hoshangabad Science Teaching Project (HSTP)

Well before the recommendations made in the NCF document, the HSTP was initiated in 1972 in Madhya Pradesh, India, with the intention of bringing about innovative changes in the teaching of science in government schools. The Madhya Pradesh Department of Education gave permission to two non-governmental agencies (Friends Rural Centre, Rasulia, and Kishore Bharati, Malhanwada) to initiate a pilot project in 16 middle schools spread over two blocks of Hoshangabad district for teaching science using the principles that we see now in PBL. The assumption was that, using experiments and the discovery method, children would develop analytic and questioning attitudes towards science, moving away from the rote-based learning being practiced in the schools. School science teaching could provide an effective channel for work in agricultural reform, development of local intermediate technology and, in areas concerned with health and family welfare and other social attitudes, enabling children to begin the questioning of traditional structures around them (Science Today 1977; Mukund 1988; Agnihotri 2002). From 1982, the administration of the HSTP was taken over by Eklavya, a non-governmental registered society.

The academic programme was developed with the active involvement of young scientists, educators, and research students from some of the leading academic and research institutions in the country. It covered over 1000 schools spread over 15 districts across Mahakaushal, Nimad and Malwa regions of Madhya Pradesh. Involving over 2000 teachers, and about 200 resource teachers, and a number of resource persons drawn from leading research and higher education institutions of the country, HSTP reached out to over a hundred thousand children annually.

The programme began with an intensive three-week teacher training, to orient teachers to the new methodology. The teachers were encouraged to do experiments themselves, to arrive at answers, in an open atmosphere, which encouraged questioning, analysis and critique. The training was followed by regular follow-up to ensure that the training was not left in isolation. In the classroom, concepts in sciences were taught using the discovery method, encouraging pupils to observe and learn from their environments. Kits and workbooks were developed for use by pupils in the schools. Though the initial belief was that students from the HSTP would not be able to do well on the Class 8 final examination, it was seen that the students from schools where the HSTP was implemented performed much better in science as compared to pupils from regular schools in Madhya Pradesh¹ (Mukund 1988; Menon 2002; Agnihotri 2002; Eklavya 2002).

¹M. Menon, 'A Story Retold.' *The Hindu Magazine*, 30 June 2002. <http://www.thehindu.com/thehindu/mag/2002/06/30/stories/2002063000070400.htm>.

In 1986, Eklavya initiated a social sciences teaching programme in the schools, developing curriculum and textbooks. In 1991, recommendations of a committee set up by the National Council for Educational research and Training (NCERT) recommended that the Eklavya programme be expanded to cover the entire state of Madhya Pradesh, up from the 15 districts originally targeted.

In 2002, orders were summarily given to close the HSTP. Despite protests from civic society, educationists, and the beneficiaries themselves, one of the most innovative science teaching programmes in the country was closed. The official reason for the closure of HSTP was attributed to a lack of progress of students, and no significant improvement in success rate in the Class 10 examination. There were murkier issues related to political interference from right-wing political parties who objected to the liberalism espoused by HSTP and Eklavya. An objection was raised by a legislator, belonging to the right-wing BJP, about the data mentioned by Eklavya in the social sciences textbooks, about animal sacrifices in the Vedic period. This spurred the state's decision to close down the program. The lack of political will and commitment resulted in the closure of HSTP. This meant the end of an education that tried to make a difference and allowed for critical and analytical thinking, hallmarks of ways of thinking in the twenty-first century.

The HSTP project brought with it a number of insights about how innovative programmes in education can be implemented at the grassroots level. The need for partnership between governments and non-governmental agencies was explicated in the process, as also was the need for political will for allowing for such a programme to expand and succeed. Wider systemic issues about teacher training, development of local-level meaningful curricula and the need for augmenting teacher education and training were identified as determinants of success.

The Homi Bhabha Centre for Science and Education

The HBCSE has developed primary school science curricula that allows for PBL. Students' can work on science problems through guided discovery. Attempts are made to integrate curricular knowledge with environmental and developmental issues and encourage pupils to tackle real world problems (Natarajan 2014; Shome and Natarajan 2012).

Projects on design and technology education were planned to be completed by teams of school students. HBCSE conducted a workshop with students between the ages 10 and 12 years to design and make a model of a playground. Students explored plans of things they would have on the playground, identified materials and planned the model, shared the design with classmates for suggestions, constructed the model, and evaluated the process and outcome. A process of ongoing self and peer assessment was part of the task. Every group maintained records of the outcomes. Analysis of the case records and observers' notes provided evidence of signs of students' learning. Knowledge about making estimations, measuring, and using tools was seen in the pupils. Social and interpersonal skills were evident in interactions between peers. Concern for the differently abled, and sensitivity about safety and security, was seen in

their interactions. Students were able to provide a critique on their abilities and that of their peers (Shome et al. 2011).

In order to investigate what teachers felt about using projects in the classroom, and to gauge their experiences, Shome and Natarajan (2013) carried out research with four teachers in Mumbai, India. Though projects were used in schools, the ideas about what constituted projects was shaped by individual teachers' perceptions about how they could be used. It was found that teachers used projects, after teaching using conventional methods, as an application of what had already been taught, instead of any novel learning. Project tasks were usually well-defined, rather than being open-ended and loosely structured. While teachers expected students to come up with tangible outcomes, more often than not, when projects were assigned as homework, they were completed by parents. Projects were rarely seen as a teaching-learning strategy, but were seen as a curricular requirement, or for a selected few to be sent for a competition. The finished products were used for assessment by most teachers, with a focus on aesthetics. The teachers in the study were of the opinion that loosely structured, open-ended, project questions were unsuitable for most students, and were useful for only 'good' students. Rarely was the focus on the process of learning of the students. Constraints to using the project mode have been variously attributed to lack of resources, unfavourable student to faculty ratios, and a lack of interest and will on the part of the teacher (Shome and Natarajan 2013).

In an analysis of projects used in schools, Shome and Natarajan (2012) identify that school projects were often mere rituals, which did not address learning goals. The activities did not pose cognitive challenges to students. Most projects overlooked opportunities of subject integration and formative assessment. Summative assessments were done, that lacked meaningful input and were limited to numbers or grades provided to the students, which did not provide scope for further learning (Shome and Natarajan 2012).

The lessons from HSTP and HBCSE have important lessons for teacher education and professional development in India.

Implications for Teacher Education in India

Teachers, who are primarily responsible for PBL implementation in classrooms, face several problems: the time constraint of having to complete the given syllabus, difficulty in raising driving questions appropriate for students and addressed to syllabus, and assessment of student learning. Many teachers who teach science and social sciences in primary schools do not have clear conceptual subject understanding, which makes it difficult for them to be effective teachers, and to know when and how to support student learning. Many teachers do not know how to give constructive, effective feedback to students. Often the number of students in a class is so large that meaningful individual critique cannot be provided. Often, the paucity of time comes in the way of delivering timely feedback. Additionally, teachers need to be supported in terms of content and resources. This can be

achieved by establishing collaborations between college teachers and subject experts, educational researchers, and teachers (Natarajan 2014). Many of the problems identified by teachers in India on implementing changes in pedagogy have been seen in other parts of the world as well (Holm 2011; Redfern 2015).

In a review of literature on pedagogy across the world, Clarke (2003) indicated that there were variations across countries in how teachers related to students, in the goals for student learning, the approaches to the curriculum and in teaching–learning strategies. Teachers in India approach pedagogy very differently from teachers in UK and USA. Teachers who teach in private schools, from different parts of India, view education differently compared to teachers in government and public funded schools, as private-school teachers often have better access to resources and innovative strategies in the classroom. Knowledge in the classroom is procedural and practical, focusing on ritual understanding of information. The analysis of the District Primary Education Program (DPEP) in Karnataka indicated that, though there was emphasis on change in teaching pedagogies, it did not translate into change in the classroom. Much of the learning in the classroom was teacher-centric, with limited emphasis or inclusion of the students' experience. Clarke attributes the inability for teachers in India to include newer ways of engaging with children to cultural factors, which give importance to rote and hierarchy (Clarke 2003).

In-service teacher training which augments the conceptual knowledge for teachers is essential. This training helps bridge the gap between what teachers know, and what they are expected to teach. At the same time, exposure to alternative teaching methodologies, assessment protocols, and methods of communication to pupils in order to engage meaningfully with students, is necessary. This will empower teachers to develop learner-centric classrooms, driven by curiosity and intrinsic motivation.

Conclusion

Research has shown the benefits of PBL. In India, the culmination of high school is achieved by examinations after Classes 10 and 12. The examination system relies on rote memorization rather than on application of knowledge. PBL, in contrast, lays emphasis on the application of knowledge, from the project at hand to the real world.

The implementation of PBL requires commitment from the policy makers, the government, the departments of education, and teachers. The pupils and their parents who are the beneficiaries of such programmes need less convincing as compared to the delivery side mechanisms. If India and Indian education has to move towards preparing learners who will be equipped with the skills to deal with the complexity of the twenty-first century, radical changes have to be made. Teacher development programmes have to gear up to provide teachers with the skills required for newer ways of transacting information, engaging students, and stimulating the spirit of enquiry and analytical thinking.

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Chapter 6

Facilitating Cooperative Learning: A Study of a Mathematics Classroom in India



Vandana Ghai

Introduction

The inspiration for this chapter comes from two sources. First, developments in the field of mathematics education in the past few decades have shifted towards social constructivist approaches. Although still a rare sight, the impact of these approaches is now, slowly, becoming visible in middle school mathematics classrooms in India as well. The second source of inspiration came from field observations as a teacher educator in the past decade. New pedagogic approaches have brought significant changes to classroom dynamics that veteran teachers tend to struggle with. Large classroom sizes and a culture of silence in the classroom, have both contributed towards a resistance to accepting cooperative learning as a useful pedagogic practice. Against this backdrop, the chapter advocates the cooperative learning approach in the specific setting of mathematics classrooms. The chapter begins by developing a context for cooperative learning approach. This is followed by an exploration of theories of, and reviewing trends in, Mathematics education over the past few decades. Building a case for cooperative learning, the chapter presents a study based on two middle school classrooms that highlights the benefits of cooperative learning for students. The chapter ends with a brief presentation of some significant insights drawn from the micro study.

Neelam, a teacher of mathematics, who had just come across the cooperative learning approach and wondered what its outcome would be for the students.

This is hypothetical account based on my experience and observations while interacting teachers in the classroom. Kindly let me know if there are any guidelines for citing this account. Time and teaching trends are directly proportional, I believe. As time passes, so do the number of modern teaching trends. There were days when talking in the class was condemned and in contemporary times, openly discussing, and talking in groups,

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is encouraged in the classroom. The graph representing the trajectory between earlier trends and now is linear—something that looks simple but is tough to comprehend, so similar to the linear equation on the board, which is brewing in these young minds, fuelling their curiosity, and urging them to look for the perfect solution. The area of the classroom remains the same, just the number of voices, all in the same volume, multiply; so many words echoing around at such a high amplitude, that it becomes difficult to comprehend. I wonder, what kind of teaching is this? The students continue to speak and I, the teacher, am the one who is silent. I wonder if this transition from the conventional teaching methods to this new teaching way is going to be beneficial or detrimental. Let's just hope for the best.

My experience of teaching mathematics to learners of upper elementary and secondary classes reaffirmed my conviction that learners yearn for more challenging ways of learning mathematics; a way wherein they are allowed to construct their knowledge and experience freedom to learn from errors and false leads, in a peer learning setting. In a typical class of mathematics, teachers by and large use a procedure that has become a monotonous routine for the learners. First, answers are given for the previous day's assignments. The teacher, or a chosen student, works out the more difficult problems on the blackboard. A brief explanation is given of new material and problems are assigned for the day. During the rest of the period, the teacher and learners solve one or, at the most, two problems. The important thing to notice about such a mathematics class is the repetition of this routine with marginal variation, if at all. In such a scenario, the teacher functions as a 'supplier' and a 'dispenser of resources and materials' and classroom interaction is largely one-way. From the teacher to the student. Such a routinized teaching of a fascinating subject like mathematics can hardly do justice to the needs of inquisitive learners.

In addition, this approach stems from the behaviouristic model that views the process of knowledge construction as singular. Devoid of belief in students' abilities to construct knowledge, this traditional approach is mechanistic, and reductionist. Classrooms using such an approach, even in contemporary times, remind one of the banking concept propounded by Freier where students 'learn' procedures specified by the teacher. The notions that students learn in multiple ways that suit their cognitive strategies, that they have the potential to develop their own strategies, that they can think mathematically, or that they can learn from each other, is completely missing. In sharp contrast is the Vygotskian notion of social constructivism that stresses the contextualization of the process of learning. It is only when learning is contextualized that the focus in mathematics can shift from the product, or right answer, to the process of mathematics.

Further, as a teacher educator, I have observed, during school internship programmes, that teachers of mathematics tend to dominate the classroom, instead of giving space to learner-initiated dialogue and discussion. As a result, learners do not play the role of active participants in the process of teaching and learning, and they develop a feeling that they cannot succeed in the subject. As a teacher, I am of the opinion that this is an issue of serious concern which presents mathematics as

fearful and stressful for students. The root causes for the same include an extensive focus only on memorization, and decontextualized teaching that creates in learners a sense of detachment from personal experiences, and limited acceptance for, and facilitation of, the process of knowledge construction. These arguments are in consonance with the observations made in the National Curriculum Framework (2005).

Learning without Burden (1993) states that teaching and learning in schools in India is focussed on transmission of knowledge and not on promoting thinking in students. This is a matter of grave concern. How the process of teaching and learning can be made more meaningful and effective is an issue that needs to be pondered over. Cooperative learning has emerged as an approach that can be employed in classrooms for effective learning. One of the major reasons for its advocacy is that numerous research studies, across diverse school settings and across a wide range of content areas, have revealed that students engaging in cooperative learning based group tasks tend to have higher academic test scores, higher self-esteem, greater quantum of positive social skills and a better comprehension of content and skills that they are studying, as compared to those engaging in individual learning tasks (Cloud 2014; Walmsley and Muniz 2003). Moreover, the perspective of students working cooperatively and collaboratively has greater depth than those who have only worked alone.

Cooperative Learning is an instructional method where 4–5 students work together in a group to achieve a common goal. Students build up their knowledge based on the fundamental bricks of personal experiences. This approach is based on Social Constructivism, specifically on Lev Vygotsky's point of view that children learn better in a socially favourable environment. In this approach, students cooperate with each other in order to support the learning of their peers, in turn enhancing their own learning. Learning takes place in a conducive, cooperative environment where students work in small groups, share their ideas and work together to complete their academic tasks.

Cooperative Learning can be viewed through three perspectives namely, **Cognitivist Perspective, Social Perspective, and Behaviourist Perspective**. The Cognitivist Perspective envisages Cooperative Learning Approach for promoting group discussions, which, in turn, promote better processing of information and better conceptual understanding. The Social Perspective promotes self-sufficiency and effectiveness, as students learn about more successful responses and behaviour of fellow learners. The Behaviourist Perspective provides effective reinforcement because it leads to more successful group performance as far as Mathematics education is concerned. The subsequent section presents the theoretical backdrop against which the cooperative learning approach can be understood.

Theoretical Background of Cooperative Learning Approach

‘Cooperative Learning’ refers to instructional methods in which 4–6 students work in small group settings and learn through mutual interdependence by helping, enabling, and encouraging each other to help the group succeed (Slavin 1995, 237). In CLA settings, students of varying ability levels learn through mutual cooperation and by pooling their knowledge and learning resources.

CLA rests on five basic premises, viz. Active Learning; Clarity of Learning Objectives; Demonstration, Practice and Feedback; Formative Evaluation; and Support. These have been briefly discussed below:

- Active Learning: Students learn better when they are actively involved in the learning process when they participate in it and contribute to each other’s learning.
- Clarity of Learning Objectives: Students learn better when the purpose of learning is clear to them and when they are involved in deciding learning objectives and how to attain these objectives.
- Demonstration, Practice and Feedback: These techniques when demonstrated by the teacher and used by the students make learning active as well as effective.
- Formative Evaluation: Formative (that is, during the learning process) evaluation aids and increases learning, especially when it is based on informal procedures.
- Support: Learning becomes more effective when learners accept each other and their ideas and their mistakes when they support each other in their learning through warm personal relations.

Models of CLA

Slavin (1995) discusses four major models of CLA, viz. Students Team Learning (STL) and its variants; Jigsaw; Learning Together; and Group Investigation.

Students Team Learning (STL)

This model assumes that students work together to learn and are responsible for each other’s, as well as their own, learning. It also emphasizes on the usage of team goals and team success. As a result, under STL, students will not merely ‘do something as a team’ but will ‘learn something as a team’. The three central concepts in STL are:

- Team Rewards
- Individual accountability and
- Equal opportunities of success.

Team rewards mean some recognition and appreciation if students working together in a group achieve the given task in an acceptable manner. Individual accountability implies that a team's success depends on the individual learning of all members. Equal opportunities for success are created by ensuring every member contributes to team success by improving his/her previous performance.

Jigsaw

'Jigsaw' was originally designed by Aronson et al. (1978). In this model, students work in teams of 4–5 members who work on academic tasks which can be broken down into as many sections as the number of members in the team. These teams are called 'Home Teams'. After all the members of the home teams have got their specific assignment, they break up and form 'Expert Teams'. Here, members discuss and analyze their tasks, collect additional evidence (if necessary), arrive at conclusions, and modify these, if needed. Thereafter, the expert groups break up and all students return to their home teams. Each member of the home team now takes a turn and shares, with the team, his/her understanding and insights, and supports the learning of other team members.

Learning Together

'Learning together' was developed by Johnson and Johnson (1987). In this model, the students are assigned to heterogeneous groups of four to five members each. Each group prepares just one response sheet and receives recognition and praise depending upon the quality of the product. It lays emphasis on team building, collaborative activity and promotes regular discussion among team members about how well their team is working and how their working can be made more productive.

Group Investigation (GI)

Group Investigation was developed by Sharan and Sharan (1976). GI is the general organization plan where students work in small groups, use cooperative inquiry, group discussions, cooperative planning and projects. Students work in two to six member teams of their choice. They choose sub-units/sub topics from the unit/topic

being studied by the whole class and work on their chosen subunits/sub topics and prepare a group report. Each group presents its report to the class contributing to the learning of all the students.

Outcomes of CLA

Experts feel that there are five important outcomes of CLA when it is used in a systematic manner. These include benefits to personal identity as well as social engagement.

- **Attitudes and Values:** Thurston (1946, 39) defines attitude “as the degree of positive or negative effect associated with some psychological object”. Human beings acquire attitudes and values through social interaction. Normally, school focuses on learners’ academic achievement and aims for the better performance of students at public examinations, like CBSE, in the long run. School management typically believes that this will help them build a better reputation for their school in comparison to, say, another neighbouring school. Therefore, development of proper attitudes and values tends to be totally ignored or becomes of secondary importance. Cooperative learning promotes social interactions and learners learn to appreciate others’ views and become sensitive to alternative possibilities. CLA, therefore, supports and sustains the development of healthy constructive attitude and socially relevant values among students.
- **Development of prosocial behaviour:** CLA puts learners in adult-like situations wherein they are expected to behave in a responsible and responsive manner. In CLA settings, learners are enabled to take their decisions, examine various pros and cons of their decisions, and modify them. Learners are encouraged to behave in a more socially acceptable manner as the teacher provides necessary support and guidance.
- **Alternative perspective and viewpoints:** CLA settings enable learners to confront various viewpoints and perspectives. The learners not only learn to listen to these but also to accommodate these and modify their previous views. In this process, they become less self-centred and less dogmatic. CLA, therefore, provides learners with a “meeting ground” where many viewpoints can be “orchestrated”, from which they can form “more articulate viewpoints and values” (Borich 1992, 315).
- **Integrated identity:** CLA settings provide social interaction geared to task related improved performance. Through such interaction over a long period, the learners are able to “see themselves” shaping up, and develop a more integrated personality. As a result of these, the learners are able to see their inconsistencies and contradictions. CLA enables learners to develop an integrated sense of “the self”.

- **Higher thought processes:** CLA engages students in problem-solving and, thereby, helps improve their critical thinking, reasoning, and problem-solving skills. CLA provides basic requirements for higher thought processes to occur, which are responded to, and assimilated by, learners.

Creating Cooperative Learning in Classroom

The following eighteen steps, as prescribed by Johnson et al. (1988) ensuring a successful cooperative classroom learning experience:

1. Specify the instructional objectives;
2. Decide on the size of the group;
3. Assign the students to groups;
4. Arrange the room;
5. Plan the instructional materials;
6. Assign roles to ensure independence;
7. Explain the academic task;
8. Structure positive goal interdependence;
9. Structure individual accountability;
10. Structure inter group cooperation;
11. Explain criteria for success;
12. Specify desired behaviours;
13. Monitor student behaviour;
14. Provide task assistance;
15. Intervene to teach collaborative skills;
16. Provide closure to the lesson;
17. Evaluate the quality and quantity of student learning;
18. Assess how well the group functioned.

Borich (1992), on the other hand, provided a more workable linkage between components of cooperative learning and organizing it in the classroom. His belief was based on the self-concluded fact that cooperative learning comprises of four components:

- Teacher-Student Interaction
- Student-Student Interaction
- Task Specialization and Materials
- Role Expectations and Experiences

Specific Procedure for CLA

Borich (1992, pp. 319–332) recommends five steps of cooperative learning activity, which are briefly described below:

Specifying the Goal

The outcome of CLA can take different shapes; the commonly seen outcomes are:

- Written group reports
- Oral performance, communicating the group consensus
- Description of critical issues
- Critique of an assigned reading
- List of references or readings on a specific topic or aspect of the task
- Higher individual achievement on the post-CLA test

In order to ensure that the final outcome of CLA becomes attainable, the teacher should, in addition to identifying the outcome, check that the students have understood it and have achieved a mind set that facilitates cooperative working.

Structuring the Task

In structuring a CLA task, the teacher should decide about various issues, such as:

- How large will the group be?
- How will learners be selected to constitute the groups?
- How much time will be devoted to group work and how much time to whole-class teaching?
- What roles are needed for accomplishing a group task, and how are these to be assigned?
- What rewards will be provided for the individual as well as group work?

The group size is usually decided on the basis of ability range of students, the time needed for achieving group consensus, sharing of materials and time needed for achieving group consensus, sharing of materials and time needed for completing the group task and achieving the desired outcome. For proper use of CLA, mixed ability groups are usually formed. These groups represent the diversity of talents, interests and abilities, and 'passive' students are invariably distributed across groups. Once formed, the groups should be broadly comparable in terms of learning skills, ability to use resources. and the number of 'non-engaged' (passive) learners; normally CLA groups consist of four to six learners. The total time allotted for a cooperative learning activity would vary according to the complexity of the task. About 60–80% of the time should be earmarked for cooperative activity and the rest for individual work. Roles assigned to the learners in a group should be decided on the basis of learner's interest, task specialization, and workable division of labour. Summarizer, checker, researcher, runner, recorder, supporter, and observer are the usually assigned roles to team members. The roles may vary in number depending upon the size of the group and the nature of group task. It is always better to list on a handout how various roles are to be discharged and respected; these constitute the

'rules of the game'. The rewards and incentives may be grades, bonus points, social responsibilities, privileges, and so on.

Teaching and Evaluating the Cooperative/Collaborative Process

The teacher should identify the cooperative/collaborative behaviours that she expects of her learners place these in a proper sequence and demonstrate these to the students. Johnson and Johnson (1987, 126) recommend that the teacher should

- Teach how to communicate one's own ideas and feelings;
- Show how to make messages complete and specific;
- Demonstrate how to make verbal and nonverbal messages congruent;
- Demonstrate and explain how to create an atmosphere of respect and trust in the group;
- Explain how to assess whether the message was properly received;
- Teach how to paraphrase another's point of view;
- Demonstrate how to negotiate meanings and understandings; and
- Teach and show how to achieve participation and leadership.

Monitoring Group Performance

For a teacher who uses CLA, it is necessary that she should observe her students as they function in cooperative learning settings. She should also intervene when necessary to assist the students in achieving the goal(s) set for them. Through monitoring, the teacher can know when the group(s) would need assistance. Very often, the teacher has to intervene to remind the students of the goal(s) set for them so that the group does not digress from its main task. Sometimes, the teacher has to intervene when students appear to be at a loss and do not know how and which way to proceed. Also, the teacher may have to provide emotional support to the learners. Many a time, the teacher has only to express her confidence in the ability of her students in order to make them active and self-confident. All these examples show how important it is for the teacher to monitor how students perform in a group.

Debriefing

Debriefing and evaluation can be combined at the end of the cooperative learning activity. For debriefing, the teacher may invite students to express how the group functioned and what factors retarded or accelerated group performance. Debriefing could also focus on suggestions for improving group performance and avoiding problems that decrease group performance. Besides, viewpoints of appointed observers could be invited and these could be responded to by members of a group. Even though debriefing may suffer from some problems, it must be

conducted. Debriefing can improve learners' insight into their own performance and also how their peers contributed to the attainment of group task and how group performance can be improved.

Reviewing Trends in Mathematics Education

The history of school mathematics education reveals that the school mathematics curriculum has been overwhelmingly influenced by the confluence of two traditions. The first tradition, rooted in Babylonian astronomy, Egyptian earth measurement, and ancient commerce, treats everyday life. This tradition deals with numerical and spatial problems. This practical mathematics is what dominates the school mathematics curriculum. The second tradition, rooted in Greek geometry and medieval algebra, views mathematics as reasoning, a liberal art that characterizes an educated person. As a result of this second tradition, students are expected to develop some facility in using mathematical principles to derive proofs of theorems, and solutions to complex problems. The rigorous deductive methods used in the second tradition 'serve as ideals for scientific inquiry; the harmonious patterns, the essence of artistic symmetry, beauty and elegance' (Kilpatrick 1991, 819).

As a result of the increased pace of technical innovations, many countries attempted modern mathematics reforms during the 1950s and 1960s. The Oxford Conference (1957), the Liverpool Conference (1959), the Conference at Oxford and Southampton (1961), the School Mathematics Project and the Midlands Mathematical Experiment during 1963–1964 were largely associated with the Reform Movement that led to New Mathematics (Cooper 1985). These were meant to provide students with an understanding of the structure of the discipline so that they could learn what they needed. The advent of the computer also affected mathematics significantly. These days, more attention is being given, in school mathematics curriculums, to teaching applications of mathematics and to making students computer literate. During the 1980s, mathematics educators revealed greater concern about the social and cultural contexts in which mathematics is taught (Bishop 1988). As a result, attention has now been turned to the mathematics of everyday life, so that the students may see connections between school mathematics and their everyday life. Mathematics teachers are now beginning to accept the challenge of making mathematics teaching alive, and thereby bridge the gap between what the child knows and what society needs in terms of mathematical knowledge and understanding.

Elementary Mathematics Curriculum

What should go into the elementary mathematics curriculum is surely a fundamental question. According to Davis and Goffree (1991, 821), there are at least three reasons why the above question is difficult to answer:

- There is great variation from one classroom, school, or nation, to another;
- Official descriptions of what happens in mathematics education are quite different from what actually does happen in the classroom; and
- The manner in which mathematics is taught and learnt is often more important than the choice of the abstract 'topic' itself.

Two considerations, which are very decisive in determining what is actually taught in elementary school mathematics, are:

- In what sense are the topics to be 'learnt'? In what senses are they intended to be known and how can this knowledge be demonstrated? and
- By what process is learning presumed to take place?

The success of the elementary school mathematics programme can be judged against several criteria; two of these, which are widely referred to in the literature on mathematics education, are as follows:

- The general level of numeracy among the students; and
- Level of mathematical thinking, mathematical analysis, and mathematical conjecturing with gathering evidence, formulating lines of reasoning, seeking and finding regularities and the key patterns.

These criteria can be viewed as the lower and the upper end of the continuum. Other criteria may be located anywhere between these extremes. It is sometimes stated that elementary school mathematics should aim at modest cognitive goals, especially in view that the learner's cognitive limits are not supported by research evidence. The results of various experimental mathematics curricula ranging from Korean Chisanbop to California's Project SEED and Papert's LOGO environments have disproved the absolute nature of these alleged cognitive limits. Whenever young children get an opportunity to learn genuine mathematics, most students respond very well. Assuming that cognitive limits exist, it must be remembered that these limits exist primarily as limitations on the kind of experience that a child can profit from, and the kind of knowledge he or she can acquire at a given moment in his/her life. If these limitations could be taken into account in a proper manner, most children would learn a large amount of mathematics and develop quite sophisticated mathematical capabilities.

Processes of Learning Mathematics

It is commonly assumed that primary school mathematics consists of facts and algorithms both of which are to be memorized, chiefly by rote. These facts and algorithms are usually told or demonstrated to the students and, thereafter, students recite these facts and practice these algorithms until they are able to use them correctly and consistently. This is what ‘knowing’ mathematics implies. Bruner (1966) however does not subscribe to this view. During recent decades, at least three major schools of thought have been identified concerning the nature of the process of learning mathematics:

- (a) Learning mathematics is essentially rote learning.
- (b) The true simplicity of mathematics can be taught beginning with simple precise abstractions of modern analysis, such as set, group, vector, space. This viewpoint, known as the ‘abstract mathematical structure’ school, has been abandoned now, though it was most prominent during the 1960s and the early 1970s.
- (c) The ‘constructivist’ position, based on Piaget’s and Papert’s work, assumed that knowledge is represented in certain special ways in a person’s mind, and that new knowledge can be acquired if, and only if, it can be related to representations previously acquired. According to this view, mathematical ideas are essentially based upon early childhood experience. From a constructivist point of view, it is important that a child should have appropriate experiences as a foundation for learning. In mathematics education, these experiences may involve concrete material or devices, such as an abacus, Cuisenaire rods, geoboards, and the like.

In most countries, these three views are reflected through classroom practices associated with math education. This is true of India as well. While most teachers, at the primary stage, use classroom practices that support the first view, quite a few teachers in progressive primary schools base their mathematics teaching on the third view. It is a matter of difference of mere degree at elementary and secondary levels.

School Mathematics Reform

The reform movement in school mathematics was spearheaded by the National Council of Teachers of Mathematics’ publication *The Agenda for Action* (1980), which opened a new dimension to mathematics education. The agenda emphasized problem solving and applications, a re-examination of basic skills, incorporation of calculators, computers, and other technology, into the mathematics curriculum and more mathematics for all students. The agenda was followed by other NCTM Standards Publications (1989, 1991, 1995). Bruner (1966) advocated that a theory of instruction must specifically identify how a body of knowledge should be

structured so that learners can most readily grasp it. A theory of instruction should thus identify the most effective ways of facilitating learning. Cooney and Brown (1985) argue that a theory, or theories, in mathematics education must ultimately provide a basis for improving the teaching and learning of mathematics. According to Manouchehri (1997), attention in mathematics education should turn, from the content of teaching and learning, to the context in which they occur. Learning mathematics is now viewed as a process of active construction rather than positive absorption, and teaching as facilitation rather than transmission.

Impact of Research in Mathematics Education

The reform movement in mathematics education and recent researches in mathematics education have impacted on four reform areas during these two decades: teacher beliefs, content knowledge, pedagogical content knowledge, and pedagogical reasoning. Summing up research on teacher beliefs, Cooney (1994) concludes,

I believe teachers make decisions about students and curriculum in rational ways according to conceptions they hold. To design teacher education programmes without understanding those conceptions and their role creates a context where teacher educators believe that their insights into the teaching/training cycle are synonymous or even consistent with those of the teachers they teach (11).

So far as teacher's content knowledge is concerned, Ball (1988a, b) is of the view that, to teach mathematics effectively, the individual teacher must have knowledge of mathematics and possess an explicit conceptual understanding of the principles and meaning underlying mathematical topics, rules and definition. Shulman (1986) argued that teachers must be able to define for students the facts and the accepted truths in a domain, and explain the validity and worth of particular propositions, as well as their relationships to other propositions. Such ability and knowledge call for mathematical knowledge beyond recall of facts and algorithms, or recitation of axioms and theorems. With regard to pedagogical content knowledge, it has been the general opinion that subject-matter knowledge alone is inadequate for teacher's work. "If teachers are to guide students in their journey into unfamiliar territories, they will need to know the terrain well. Both knowledge of the content and knowledge of the best way to teach that content to students help teachers construct meaningful representations, representations that reflect both the nature of the subject matter and the realities of students' prior knowledge and skills" (Grossman 1991, 203).

Brown and Borko (1992) defined pedagogical reasoning as the process of transforming content knowledge into pedagogically powerful forms adaptive to particular groups of students to facilitate student's understanding. The transition to pedagogical reasoning is now considered a major component of learning to teach. Yet, many prospective teachers find it difficult to make this transition. In the Indian

context, the idea of ‘pedagogical reasoning’ is yet to be assimilated in pre-service teacher education curriculums for teachers of mathematics. This is a significant issue that teacher education institutions in India need to address in the near future.

It can, therefore, be legitimately concluded that cooperative learning approach is not just a slogan. It is well-grounded in theory, as well as social psychology. Mathematics education has witnessed a reform movement spread over many continents, though its formulation was largely confined to Western Europe and the USA. The alternatives in mathematics education can support new initiatives for transforming classroom practices. The present study is an attempt in this direction.

Design and Procedure of the Study

The discussion in the previous section has traced the trajectory of changes in the field of Mathematics Education in the past few decades. The relevance, and need for cooperative learning has emerged out of contemporary trends in social psychology that have had a strong influence on pedagogy. Juxtaposing field observations discussed at the beginning of the chapter against the conceptual foundations of the social constructivist theories, such as that propounded by Vygotsky, raised significant questions about the possibility of teaching mathematics through a cooperative learning approach. In this light, the present study was conceptualized with the following objectives:

- To develop a positive change in learner’s attitude towards learning mathematics through cooperative learning approach.
- To assess whether there is a positive change in mathematics achievement of students through cooperative learning approach.

The study is based on a pre-test–post-test experimental design. The study was conducted on two Class 7 student groups studying in separate English-medium public schools. Both the schools were selected purposively on the basis of the willingness of the school authorities to support the study. The learner groups in these schools were called ‘Experimental Group’ (EG) and ‘Control Group’ (CG). Each group comprised of fifty students. Pre-test, Post-test, and an attitude to mathematics scale, were developed. The instructional material for use in the instructional experiment was developed on the direct and inverse variation. Pre-test and Post-test, two parallel tests, were developed in order to assess the change in mathematics achievement of students in both the groups. Raven Progressive Matrices were administered to all students in order to classify them using intelligence. Pre-test and attitude to mathematics scale were administered at the commencement of the instructional experiment. Post-test and attitude to mathematics scale were administered at the end of the instructional experiment. The data collected through various tools were analyzed using appropriate techniques and interpreted.

Orientation of Teachers to Cooperative Learning Approach

A two-day orientation programme was organized for teachers in the school premises. Demonstration-cum-lecture followed hands on teaching activities based on cooperative learning approach were organized. The Student Team Learning model of CLA was used and it was meant to compare cooperative learning approach with whole class learning. The purpose of this orientation for the teachers was:

- To ensure that they were conversant with how to organize and conduct CLA-based instructional lessons, observe and monitor students talk and non-verbal behaviour.
- To help them to develop clarity on the how to break up the topics of ‘Variation’ and ‘Inverse Variation’ into sub-topics.
- To get an idea of the problems developed on these mathematics topics by the researcher.
- To make them aware of the objectives of the study and the whole instructional experiment, the content and the sequence in which it was to be taught to ensure optimal teacher involvement in the study.

The various tools used in the study were:

- **Raven Standard Progressive Matrices (1983):** RSPM is a non-verbal culture fair test of general intelligence. First developed in 1938 RSPM was based on Spearman theory of intelligence. It consists of five sets of items—A, B, C, D and E—with 12 items under each and 60 items in all. Each item is based on a pattern with a missing part, the missing part being one of the five given options. Items in set A are the easiest, and those in set E the most difficult. A person’s total score on RSPM is an index of his/her intellectual capacity and this score is relatively free from the impact of one’s cultural environment.
- **Pre-test and Post-test:** A six-item parallel form test was developed to measure students’ achievement in the beginning and at the end of the experiment. Three items assessed students on the application and the other three on analysis. Test Items in the parallel forms were matched on difficulty value and discriminatory index. Most items in both pre-test and post-test have a difficulty index between 0.58 and 0.75, and discrimination index between 0.42 and 0.60.
- **Attitude to Mathematics Scale (ATM):** This was a modified version of Attitude to Mathematics Scale constructed by the researcher during her Ph.D (Sabharwal 2001). It comprised of 10 items; out of these, six items were positively worded and the remaining four were negatively worded. It was administered to all students in the beginning as well as at the end of the instructional experiment. Both the groups responded to the ATM scale on the same day and it was ensured that every student responded to all the items of ATM Scale. The responses were scored according to the pre-determined scoring scheme.

Developing Questions for Practice Session of Cooperative Learning Approach

Questions developed for the practice session of Cooperative Learning Approach was based on Hildebrandt's (1959) scheme of categories of mathematical problems. According to Hildebrandt (1959), problems in mathematics can be divided into 4 categories or types:

- Problems of the first category involve the use of one or more simple mathematical principles and concepts but the problems may deal with phenomena or experiences that students may not be very familiar with.
- The second category of problems may require a certain amount of **experimentation** and collection of data before making students feel that the solution is possible.
- Problems of third category concern a situation that is a changed or **complex version** of the simple situation. Such a situation may be created by adding another dimension to the problem, or modifying it such that it requires the study of complete generalization or abstraction before it can be solved.
- The fourth category of problems leads to the formulation of general principles or the conjecturing and eventual proof of specific problems.

Considering the age group of the study sample, the investigator developed category 2 and category 3 problems for a practice session of CLA and pre-test and post-test.

Data Collection and Instructional Experiment

The pre-test–post-test matched group study used cooperative learning approach (CLA) and whole class teaching on two groups of learners in an unaided school of Delhi. The study assumes that: (a) we have a common goal of developing understandings and competencies of students in classrooms to equip them for new roles in society; (b) classroom instructional practices are planned to achieve this goal; and (c) these are very closely related to the learning that takes place in classrooms. In this experimental study, the students were matched on intelligence using RSPM. There were 10 mixed-ability groups (with 5 members each) in the EG (Experimental Group). The CG (Control Group) students were taught the same content in whole-class settings. Both EG and CG were taught for 10 h in 10 sessions of 50-min duration. Problems were developed on 'Direct and Inverse Variation' and using Hildebrandt's scheme of classification of problems. Two parallel forms of achievement tests were constructed and used as pre-test and post-test. Study effects were measured in terms of achievement in learning and attitude in learning. The instructional Experiment was spread over 12 days, excluding orientation of teachers. The time taken for the pre-test before the

beginning of the experiment and the post-test given at the end of the experiment was not included in these 12 days. Positive change in mathematics learning and attitude of students' learning towards mathematics were analyzed using t-ratio test.

Findings of the Study

Students who learnt mathematics through Cooperative Learning Approach revealed a more positive change in mathematics achievement. Data was collected in respect of significance of mean differences regarding positive changes in attitude towards mathematics for the entire learner group that learnt mathematics through CLA, and for the group that learnt mathematics through the whole-class approach. After t-ratios were calculated for both groups, it was concluded that learning mathematics through CLA develops a more positive attitude towards mathematics among elementary level students than learning mathematics through whole-class approach.

Limitations

The main limitation of this experiment proved to be the short duration for which it was conducted. As a result, the difference among students of different ability levels could not be worked out.

Implications of the Study

The study provided interesting insights about teaching and learning in mathematics classrooms. Mixed ability grouping is better suited to effective learning of mathematics through Cooperative Learning Approach, than homogeneous ability grouping. Generally, conceptual knowledge has been a subject of greater emphasis than procedural knowledge, by the teachers of mathematics while teaching. Effective use of CLA presupposes relatively greater conceptual knowledge on the part of learners.

Mathematical concepts are an integral part of the language of mathematics. This differentiates the language of mathematics from the language of other disciplines significantly. As a part of the process of learning, teachers need to negotiate the meaning of these terms in a mathematical context. This will facilitate learning in mathematics by equipping them with the kind of knowledge that enables them to derive mathematical procedures from verbally stated problems.

To provide a window into the learner's mind, peer-interaction and learner-initiated discussion need to be encouraged by the mathematics teacher.

Learner interaction can provide interesting insights into how students approach, structure, and restructure a given problem.

By encouraging engagement with peers, the classroom environment can be made non-threatening. In such a goal-oriented, interactive environment, students tend to learn faster.

It is important to conclude with an emphasis on the role of teacher in a classroom using cooperative-learning approach. His/her role is perhaps a lot more crucial here and he/she needs to devise innovative instructional strategies that can enable each learner to learn effectively and at his or her own pace.

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Chapter 7

Errors as Learning Opportunities: Cases from Mathematics Teaching Learning



Alprata Ahuja

Introduction: Mathematical Learning

Mathematics is hierarchical, with its constituent concepts being abstract in nature. The abstractness of the concepts makes mathematics perceivably a more difficult subject to understand; the fear of mathematics is more common compared to the fear of any other subject in school. The hierarchy of the concepts also evokes frustration among learners, as a lack of understanding of one concept leads to a lack of understanding in other concepts (Dhankar [n.d.](#)). There is also an inherent tendency to teach mathematics by focusing on sets of algorithms and procedures; giving the impression to learners that learning mathematics is all about perfecting the procedures through drill, and applying them at appropriate situations presented to them while learning mathematics (Gandhi and Varma [2007](#); Schoenfeld [1987](#)). As Boaler ([2012](#), p. 2) puts it; mathematics is taught as a “narrow subject” which “involves copying methods that teachers demonstrate and reproducing them accurately, over and over again”.

This is what creates the common perception that mathematical learning is limited to learning of procedures and computations. The formulae in mathematics are equated to an instrument; and, as discussed above, the focus is on using them at the places deemed fit. This type of learning in mathematics is said to be ‘Instrumental learning’ as opposed to ‘Relational learning’ wherein the underlying rationale of the mathematical process is also understood by the learner (Skemp [2006](#)). The understanding of linkages between several concepts in mathematics is said to

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promote the relational aspect of mathematical learning. This helps the learner to apply learning from one context to another, and to use the mathematical learning in new situations and life in general.

Errors in Mathematics

Errors in mathematics have no significant value and position in the ‘instrumental’ way of learning. These errors in mathematics, infamously, form the ends in themselves, as the teacher merely gives the final verdict of it being wrong. The only follow-up, which is witnessed in mathematics teaching and learning, for rectifying these encountered errors is to give learners sufficient practice, with the underlying assumption that more and more practice will help minimize the errors caused (Agnihotri 1988; Pradhan 2000).

With long-standing concerns about reforming teacher’s pedagogy from the constructivist perspective, and placing the learner as the active meaning-maker in learning of mathematics, there is an urgent need to revisit the role of errors in mathematical learning. “Teachers must ... construct a form of practice that fits with their students’ ways of learning mathematics” (Wood et al. 1995 as cited in Simon 1995, p. 117). Students will become active learners only when teachers design activities and tasks that provide space to learners to mull over the mathematical concepts; learners should have guided explorations and inquiry related to the concepts in question. These deliberations over mathematical concepts and the iterative process of mathematical understanding will not be error free, if carried out in the true sense of inquiry (Borasi 1994). In fact, errors will form rites of passage to mathematical learning and knowledge (Peng and Zengru 2009). As Agnihotri (1988) states, “There is an overwhelming evidence to suggest that no real learning takes place without making what we call errors.” (para. 3).

At this juncture, it is pertinent to note that errors in mathematics are gateways to reveal the true nature of the mathematical understanding of learners (Radatz 1980; Agnihotri 1988; Pradhan 2000). Errors always have causal routes that may be due to: overt focus on learning of right procedures and algorithms; linking the present understanding to incomplete faulty pre-concepts; the concepts taught presently are too abstract for the learner to comprehend and apply. The over-generalization or limited understanding of a concept may also lead learners to committing mathematical errors (Radatz 1980; Pradhan 2000). It could also be possible that learners have been creative enough to think independently which leads to results conflicting with expected outcomes (Borasi 1987, 1994). Whatever the case, errors cannot be simply discarded or discounted as being insignificant, as unpacking of these errors reveal the nuances of the mathematical understanding of learners. Going further, “we as teachers can turn these errors into useful learning devices” (Pradhan 2000, para. 4) by actively involving learners in this process of learning from errors.

Error Analysis

“Error analysis in mathematics education has a long history.” (Radatz 1979, p. 163). Radatz (1979, 1980) has reported in detail the transition in the implications and importance of error analysis in mathematics education. From errors being viewed as mere acts of carelessness and ignorance in the behaviourist paradigm of education, there was an emergence of using errors for diagnostic purposes. Initially the use of error analysis was restricted to arithmetic, but later it began to be applied to different areas of mathematics. Error analysis was used for diagnostic and remediation purposes as teachers could plan appropriate action to help learners remediate their errors. Error analysis was also used for identification of the areas of mathematics that needed careful planning and transaction. Teachers would take pre-emptive measures while carrying out their teaching plans and give specific attention to certain content areas based on their past encounters with errors. Since there always existed the possibility of different learners making new and unseen errors, related to same concept in mathematics, the need for individualized learning materialized. Radatz (1979) states: “the individualization and differentiation of mathematics instruction require skilful, specific diagnoses of difficulties” (p. 164). With the paradigm shift to the learner being considered as an active meaning maker in the construction of knowledge, error analysis as a process was also given a makeover. Error analysis was no longer only used for diagnostic purposes. It was used for exploration of mathematical thinking of the learners, and by the learners. Learners were given space to engage with their errors meaningfully “attempting to explain and fix up their own errors” which were both motivating and challenging tasks (Borasi 1987, p. 4). Borasi has taken the idea ahead by speaking of “errors as springboard for inquiry” (1994, p. 167). She establishes that learning is a generative process and teaching is the process of “providing necessary support to students’ own search for understanding by creating a rich learning environment that can stimulate students’ inquiries and by organizing the mathematics classroom as a community of learners engaged in the creation of mathematical knowledge” (Borasi 1992, pp. 2–3 as cited in Borasi 1994, p. 167).

In this chapter, the researcher has made an attempt to bring forth the idea that mathematical errors are means to paint a detailed picture of the mathematical understanding and knowledge of learners. The researcher has tried to recreate the process when teachers and learners are both involved in error analysis. The researcher has also tried to establish that error analysis as a process is equally beneficial to both learners and teachers when it becomes a regular part of their mathematics teaching and learning.

Newman Error Analysis Framework: An Overview

Newman Error Analysis, henceforth addressed as NEA in this chapter, is used as a theoretical framework to analyze the errors made by learners in solving

mathematical questions. The stages of this framework are sequential, with each stage relating to the steps a learner might take in solving a mathematical question.

Anne Newman (1977) attempted to understand the type of errors made by learners in solving mathematical questions, especially statement questions, in order to understand the reasons that lead to these errors. She conducted research with 917 twelve-year olds from 31 different classes, giving them a test of 40 written questions. Newman later interviewed the four lowest performing participants from each class, making a total of 124 interviewees. A learner had to answer a series of interview questions after attempting to answer the statement questions for the second time, so that Newman could get an insight into the thinking behind the process adopted by the learner for solving the mathematical questions at hand, and the consequent error. The interview questions were:

- (a) "Please read the question to me. If you don't know a word, leave it out."
- (b) "Tell me what the question is asking you to do."
- (c) "Tell me how you are going to find the answer."
- (d) "Show me what to do to get the answer. Talk aloud as you do it, so that I can understand how you are thinking."
- (e) "Now, write down your answer to the question."

(Clements 1980, p. 9; Newman 1977 as cited in Dickson et al. 1984, p. 339; White 2009, p. 251).

Newman categorized the errors into five broad categories, which are explained in detail below:

1. **Reading:** If the learner has difficulty in reading a word or a symbol then the error falls in this category. Reading of words with similar spellings and sounds may cause difficulty to the learners like word 'angel' and 'angle' have similar spellings but different meanings. The mathematical symbols maybe misunderstood sometimes due to similar appearance, like $+$ or \div , or the learner may simply not be aware of the mathematical symbol being used in the context.
2. **Comprehension:** The learner has difficulty in comprehension at two levels. General comprehension requires the learner to make sense of the whole statement of the question. Meaning of specific terms and symbols should also be clear to the learner in order to proceed to the next step of solving the question. For instance, the learner may not know how to interpret fractions, exponents, symbols, and so on.
3. **Transformation:** After comprehension, the next step required is to select the appropriate mathematical process for solving the given question. Hence, the name of this type of error is 'transformation error'. The above three stages formed a major share of percentage of errors by the learners (Dickson et al. 1984).
4. **Process:** The learner is not able to perform the required procedure or algorithm for solving the question, now available in the mathematical form. The error in this stage can occur if the learner adopts a faulty algorithm; like error caused by misunderstanding related to borrowing in subtraction.

5. **Encoding:** It is important that the final answer is presented in the acceptable form or desirable form. A few question situations require that the final answer is given as a percentage or as a fraction. If the learner fails to identify the specific form of answer required, then encoding error occurs.

Also, Newman discussed two other categories of errors: carelessness error and errors due to low motivation. The carelessness error can happen when learners accidentally commit errors due to hasty processing; low motivation errors occur when one is not motivated enough to give their best effort (Clements 1980; Dickson et al. 1984).

Using NEA as Tool for Reforming Pedagogy: Instances from Mathematics Classrooms

Newman Error Analysis has been used time and again to study the errors committed by the learners and it has been well-researched as a tool to understand the unsuitability of remedial programmes for mathematics in schools (Ellerton and Clements 1996; White 2009). In the given study pre-service teachers—studying in an under graduate four-year teacher training program during their practice in the field—were guided and mentored to explore the application of NEA with the learners with whom they were interacting as well as teaching. These pre-service teachers had studied the NEA framework in detail and gained in-depth understanding of the nuances of the application of this framework. They had also been facilitated to understand some of the modifications and further extensions of the framework. They had analyzed the research articles, based on Newman’s extended interviews, by Clements and Ellerton in 1995 and Ellerton and Clements in 1997, to understand the changing dimensions of the NEA framework. The idea was not to replicate the application of the framework in the field but to experience and learn how errors provide the gateway to understand the thinking of learners and how they, as teachers, can use this framework as a pedagogic tool to make their teaching responsive and facilitate learning. The next section of the chapter presents some of the vignettes from the field that will help the reader to understand the experiences of, and the challenges faced by, these pre-service teachers while trying out the NEA framework.

Henceforth, in the description of the process of data collection and the cases, ‘the pre-service teacher’ is referred to as ‘the teacher’ and ‘the primary class student’ is designated by ‘the student’.

There were fifty teachers and each of them worked closely with students of three primary classes. The researcher presents three cases with details, such as the questions used by the teachers for data collection, and further fine points about the process of data collection, interviewing, and so forth. Here, the researcher has opted to discuss only three cases as she found that these were representative of the majority of the other cases. Also, the underlying idea of the study explained in this

chapter is to focus on the processes; this can be done only if a few cases are discussed at great length. Another noteworthy point is, that the researcher takes a gender-neutral stand towards learning of mathematics. She believes that each student has an individualized direction of learning and it cannot be correlated to the gender of the student. Boaler (2012, p. 135) states, “Mathematics is and has always been about deep inquiry, connection making and rigorous thought. Girls are ideally suited to the study of high level mathematics and the only reason that they are under-represented now is because the subject is misrepresented and taught badly in too many classrooms.”

In each of the cases presented below, the student was selected from a primary class and they were presented with a set of a few questions (usually, a set of 4–5 questions) in written form, relating to a specific mathematical concept. These questions were adapted from their text books. The choice of the mathematical concepts, the context, and the format of questions, were made to ensure that these students would have a certain level of familiarity with them. The teacher had developed rapport with the students before carrying out this task. She carried out this task with each student in several continuous sessions of an approximate duration of one-and-a-half hours each. In the first session, the students were told to attempt the questions following the steps of reading, explaining what is asked in the questions, and verbalizing their thoughts while trying to solve the questions. If students required any help, then teachers provided necessary scaffolding. In the first session, after the students completed the set of questions, the teachers then studied the answers and solutions given by the students, and interviewed these students, to understand their underlying thought process. The interview questions used by the teachers were similar to those used by Newman. The first session yielded many permutations and combinations of trajectories of learning mathematics: sometimes, a correct solution on paper did not imply correct mathematical reasoning; sometimes the reasoning was correct, but the steps shown by the student on paper were not correct. The teachers conducted follow-up sessions (ranging from 3 to 5 sessions) where they tried out different strategies and activities to help students co-construct their understanding related to the mathematical concept in focus. The teachers followed a pattern of continuous assessment to ascertain the mathematical understanding of the students. Each session was audio recorded to help the teachers plan their next session in line. The following section of the chapter discusses three cases in detail.

Case 1: A student of Class 2 (Age: seven-and-a-half years) studying in a Government school. The student was given a few questions on subtraction, having only statement questions. The following statement question was given: “During the class election, Raju got 17 votes out of 42 votes polled. How many votes went against Raju?” The student was told to read and attempt the statement question. The student was prompted to verbalize what she/he was thinking while solving the question. The student had difficulty in reading few words like ‘election’, ‘polled’, and ‘against’. The student did not know the meaning of these words and thus had complication in comprehending the whole statement. Here, it is worth noting that the words ‘who’ and ‘how’ have similar sounds which also proved to be a source of

Fig. 7.1 Subtraction question attempted by the student

$$\begin{array}{r} 17 \\ - 42 \\ \hline 05 \end{array}$$

Fig. 7.2 Similar subtraction questions attempted by the same student

$$\begin{array}{r} 27 \\ - 18 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 34 \\ - 12 \\ \hline 22 \end{array}$$

$$\begin{array}{r} 56 \\ - 36 \\ \hline 20 \end{array}$$

confusion to the student. After help from the teacher, and she/he could comprehend the meaning of the given question, the student proceeded to solve it using the standard algorithm (usually used in schools) as shown above (Fig. 7.1).

The student did not transform the statement question to the correct mathematical form as the representation of the given question is done in the reverse order from the expected representation. The student attempted three more questions and made similar kinds of errors. To understand further, the teacher asked, in the interview, how the subtraction algorithm had been performed. The student replied that 2 is subtracted from 7, and we cannot subtract 4 from 1, which is denoted by writing 0 (here it is simply not subtraction of 1 from 4 but subtraction of 10 from 40). Clearly, the transformation error can be seen to exist here. The teacher was intrigued and thus, wanted to know more about the student's understanding of borrowing and its relation to subtraction. Other questions, this time in symbolic form, were given to the student and the solutions to these questions by the student were as shown above (Fig. 7.2).

On analyzing, it was found that language indeed created a problem for this student and, on being helped to understand and make the connection between the words and the symbolic representation, the student was able to proceed to the stage of processing the algorithm. It was further seen that borrowing in subtraction also proved to be another cause of the error. The subtraction questions without borrowing do not cause any error, but such is not the case with questions related to borrowing. In borrowing, there is a need for the student to understand the place value (here, grouping in 'tens' and 'ones'), exchange (transferring 1 'ten' to 10 'ones' position in place value of digits) and regrouping (combining 10 'ones' with given set of 'ones'), and the role of these steps in a subtraction operation (Zevenbergen et al. 2005). The student puts 0 as an output where the student sensed that a bigger number (digit) is being subtracted from a smaller number (digit).

The teacher, in the follow up, adopted different ways of helping the student understand the given, and similar, situations. There was first a discussion on few 'homophones' (Zevenbergen et al. 2005, p. 36) to first remove the confusion created by similar sounding words such as 'how'-'who', 'minutes'-'minus', and 'forty'-'fourteen'. Then the next issue which was identified, again based on

language, was to explain the meaning of a few words such as ‘election’ and ‘polled’ in the language comfortable for the student. Here, using the mother tongue (Hindi) helped the student to comprehend the question. The teacher also decided to work with the student’s understanding of place value and then discuss its role in subtraction through using manipulatives of loose sticks and bundles of 10 sticks.

To discuss the role of place value in subtraction and borrowing, the teacher started with a small step of making bundles of 10 sticks to help in representing 10, 20, 30, 50, and so on. Some two-digit numbers, such as 23, 45, and 67, were represented with the help of these bundles and loose sticks. Eventually, the student was able to establish the relation between ‘ones’ being denoted by loose sticks and ‘tens’ are being denoted by a bundle of 10 sticks. Then, the student was given few direct subtraction questions in progression like $16-5 =$, $26-9 =$, $82-37 =$. With help of doing these questions the student could establish that loose sticks can be removed from loose sticks for representing the composite step of subtracting ‘ones’ and similarly the bundles can be removed from the bundles for representing the composite step of subtracting tens, when we have more number of loose sticks/ ‘ones’ and the bundles of tens/‘tens’ for the minuend. The student also explored the idea of borrowing if the number of loose sticks in minuend is not more than number of loose sticks in the subtrahend. The idea of opening a bundle of 10 sticks and combining it with loose sticks was explored by the student and thus subtraction questions were further dealt. Figure 7.3 picture depicts the process used by the student.

At a later stage, when deemed appropriate, the teacher moved towards the use of mathematical symbolism and the process of writing, slowly removing the support of concrete representation. The idea of borrowing and its role in subtraction was discussed using several other concrete representations with beads and cards, so that the student was not fixated on sticks for her/his understanding of the operation of subtraction and borrowing. The perceptual variability principle of Dienes ‘suggests that conceptual learning is maximized when children are exposed to a concept through a variety of physical contexts or embodiments’ (Post 1992, p. 9). The teacher gave a new set of questions relating to the market and using the context of money. The student was given freedom to express her/his solutions in the language in which she/he was more comfortable, that is either English or her/his mother tongue, Hindi. She/he was able to explain and solve two-digit subtraction questions,

$$26 - 9 = 2 \text{ bundles and } 6 \text{ sticks} - 9 \text{ sticks}$$

same as:

$$1 \text{ bundle and } 16 \text{ sticks} - 9 \text{ sticks}$$

gives:

$$1 \text{ bundle and } 7 \text{ sticks} = 17 \text{ sticks or } 17$$

Fig. 7.3 Process of subtraction followed by the student using sticks as manipulative

but was not able to solve three-digit subtraction questions. The teacher extended the use of concrete representation for three-digit numbers and thus continued the process of analyzing errors, and working on them to help the student extend her/his learning.

Case 2: A student of Class 4 (Age: 9 years) studying in a Private school. The student was given questions related to multiplication, composed of both direct computational questions and statement questions. The statement questions were presented in both English and Hindi. The teacher observed a disconnect between the mother tongue and the language used in school. She wanted the student to comprehend the language and meaning of the questions while attempting them. Direct computational questions ranged from multiplication of two digit with three-digit numbers, to questions like $20 \times 30 \times 40 =$, $57 \times 0 \times 0 =$. While attempting the direct computational question, the student made careless errors; when the teacher talked about them later, the student was able to identify and correct the solution provided by her/him. Since the error was not repeated, thus the error was categorized as careless error. Surprisingly, here, the student was able to explain the process stepwise that she/he had shown in the written form, but failed to explain the reasoning behind carry over in multiplication. It was not clear to the teacher why student was facing difficulty in the explanation of the carry over. Maybe it was because our classroom teaching stresses the importance of the written format, and not on forming connections, or verbalizing mathematical thoughts (Chapin et al. 2003).

The teacher decided to move to statement questions and discuss the solutions presented by the student. The first statement question was “The product of the smallest three-digit number and largest two-digit number is _____”. The student was not able to attempt it as she/he was unable comprehend the statement; the meaning of specific mathematical terms such as ‘product’, ‘smallest three-digit number’ and ‘largest two-digit number’ were confusing. The next statement question was: “A public library has 286 shelves and each shelf has 10 books. Find the total number of books available in the library”. The student read the statement correctly and even explained its meaning holistically but when the student reached the stage of transforming the question to mathematical form; the student chose the operation of addition; writing it as ‘ $286 + 10 =$ ’. When the teacher prompted further for explanation, the student said “we have to find out the total”. The practice of identifying keywords like “total”, “remaining”, is a norm followed in mathematics classrooms, before reaching the step of transforming the statement question to a mathematical form, and that’s exactly what the student was doing here. The last statement question attempted by the student was: “A music store sold 192 CDs on an average for every week. Find the number of CDs sold in 38 weeks”. On attempting this question, the student read and explained the statement correctly; next, the student was able to transform the statement to correct mathematical form by choosing the correct operation of multiplication and reached the final answer as 11,796. On further exploration, the student failed to conclude that 11,796 is the number of CDs sold after 38 weeks. The teacher could only assume that it is either due to low motivation that student was not able to summarize, or it is an encoding

error as the student does not actually know what the result eventually signifies. The teacher decided to help the student with comprehension error and transformation error, initiating the building of a mathematical dictionary where, along with the mathematical word, its meaning, and one or two examples, showing the usage of the word, and a picture/diagram highlighting the meaning of the word was depicted. The making of a mathematical dictionary had a snowball effect and the student was motivated to keep on adding new terms and symbols to it. Another strategy tried by the teacher for helping the student to comprehend and transform the question was to read, and then use pictures and icons before representing it in the mathematical form. For instance, in the statement “If a basket has 40 fruits, then how many fruits will be there in five baskets?” The teacher guided the student to read the statement question, break it into parts, and make pictures to depict each composite part (Fig. 7.4).

To further discuss the process of multiplication, the teacher spoke about repeated addition and its relation to multiplication. Successively, the use of symbols of multiplication instead of adding the number repeatedly was discussed. The next step in line was a discussion of two-digit and three-digit multiplication. The teacher discussed the role of distributive property in multiplication. She presented the question: “Find the cost of 5 packets of biscuits, if one packet costs Rs. 24”. The teacher used the context of money, and said that “If for buying one packet you are paying a 20 rupee note and four 1 rupee coins then can you show how many 20 rupee notes and 4 one rupee coins will be needed to buy 5 packets”. The teacher made a tabular representation to depict the process (Fig. 7.5).

The number of packets was gradually increased to 10, 15, 20, 30, 36, and so on. The context of money made discussion more meaningful to the student. Eventually, the context of money was detached from the statement questions. The explanation through tabular representation was linked to the standard way of writing the multiplication algorithm (it is the standard way of showing multiplication which is commonly adopted in schools). The following example explicates the above discussion point.

To multiply 56×23 (Fig. 7.6).

The final form of answer was underscored every time to help the student understand its importance. Follow up questions was given to the student and with the autonomous choice of giving explanation of the solutions either in words, pictures, iconic representation, or using symbols as in tabular representation.

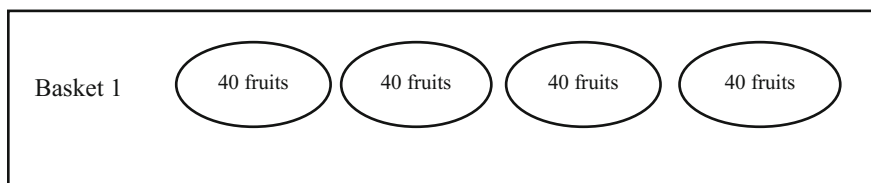


Fig. 7.4 Representation made by the student of the given multiplication question

	1 packet	5 packets
20 rupee note	20	$20 \times 5 = 100$
1 rupee coin	4	$4 \times 5 = 20$
Total amount (Rupees)	24	120

Fig. 7.5 Role of distributive property in multiplication using context of money

X (multiply)	20	3
50	100	150
6	120	18

$\begin{array}{r} 56 \\ \times 23 \\ \hline 168 \\ 1120 \\ \hline 1288 \end{array}$	<p>→ this step corresponds to $6 \times 3 + 50 \times 3 = 18 + 150$</p> <p>→ this step corresponds to $6 \times 20 + 50 \times 20 = 120 + 1000$</p>
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Fig. 7.6 Role of distributive property in standard algorithm of multiplication

Case 3: A student of Class 5 (Age: 10 years) studying in a government school. The student was given questions related to decimal operations, using the context of money. The first statement question was: “How many paise does a match box cost?” There was a figure of a matchbox made adjacent to the statement question with Rs. 0.50 written on it. The student read the statement correctly but gave answer in rupees “Zero point fifty”. The teacher again stressed that the answer is required in ‘paise’. The student replied, after thinking for a minute, and gave answer 50 paise. The teacher moved to the next question, “How many match boxes can we get for Rs. 2.50?”. The student gave answer 5. The teacher asked, “How did you find it out?”. The student gave explanation as “50, 50–100, 50–150, 50–200, and 50–250” (by simultaneously counting number of times on her/his finger). The student was counting the number of times 0.50 will go into making 2.50 and then gave answer accordingly. The teacher asked the student to write it down and show it through a mathematical process. The student launched into a soliloquy saying, “is it divide?”, “No, No”, while writing it down “ $2.50/100$ ” and cancelling it. The teacher asked her/him to write, whatever she/he has done mentally to solve it. Eventually, the student wrote down and gave final answer as 2.50 (Fig. 7.7).

The student is able to use repeated counting 50 (it is actually counting of 0.50) to get 250 (or to get 2.50). The student is facing trouble in the stage of transforming

Fig. 7.7 Representation of student's process of counting number of times 50/0.50 will go into making 250/2.50

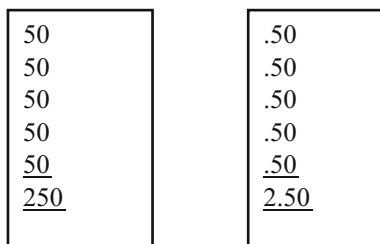
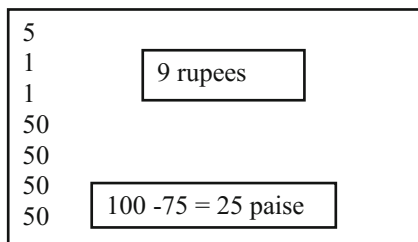


Fig. 7.8 Representation of student's process of finding the remaining amount



the question mathematically and explaining the process using the correct mathematical operation and symbolism due to the decimal notation. The teacher decided to work with the reading and writing of decimals for helping the student to resolve transformation stage error and process skill error as the teacher could see that the correct reasoning was there, but the use of decimal was creating the hindrance for the student in explaining and verbalizing her/his thoughts correctly. The teacher gave one more question before moving on to the stage of working with the student. "Arun wanted to buy a soap of Rs. 8.75. He has a five-rupee coin, two one-rupee coins and four half-rupee coins. Write in rupees the amount of money he will get back". The student asked for some help in comprehending the question, which teacher did readily. Then the student asked "What is half a rupee?" The teacher replied, "half of one rupee"; after thinking for few seconds, the student said "Okay. 1 rupee is 100 paise; so $\frac{1}{2}$ rupee will be 50 paise; Yes, it is 50 paise". The student wrote the following solution (Fig. 7.8), giving the answer '25 paise' and gave the explanation, on being prompted by the teacher, as "I have subtracted 75 from 100".

The student made errors in showcasing the explanation of the process. She/he could not present correct mathematical representation and encode answer in the desired form. The teacher decided to work with the student's understanding of tenths and hundredths using the Dienes Multibase Arithmetic Blocks to represent ones, tenths, and hundredths. One was represented by using flat, tenths was represented using long and hundredths was represented by using the units (Resnick and Ford 1981). The relation was also built with the context of money by highlighting that 1 paise will correspond to a unit cube representing a hundredth and 100 paise will correspond to 100 unit cubes and it will be equivalent to 1 rupee, which is clearly shown by using 100 unit cubes making one flat, which represents 'one' here. Conversion of rupee to paise and vice versa was discussed with help of the Dienes

blocks. The teacher also worked with reading and writing of decimal notation correctly. For this, the teacher referred to some practice questions. Blocks were given to the student for reference if required but, since the student already had a certain level of reasoning, referring frequently to the use of blocks was not required and was neither prompted. On providing a new questions set, the student did try to write the solution using the appropriate symbolism, and showed enhancement in the comfort level for the usage of decimal notation.

The above discussed cases are complete episodes in themselves and each case paints a clear picture of how teachers and learners have used error analysis as platform for learning mathematics. The following section delineates the implications of this research work.

Implications from the Study

Mathematics education is a complex network of several interacting variables, such as teachers, learners, ethos of classroom, content, pedagogy, and so on, and errors are derived from the effects of this complex network (Radatz 1980). Some important implications, for learners, teachers, and pedagogy, which can be drawn from this research work are explicated below.

- **Responsive Pedagogy of Teachers:** Error analysis can be a crucial component of the teacher's pedagogy wherein equivalent space to both learners and the teachers is provided making both accountable for learning. "The available research suggests that there may be better ways for students to learn mathematics than mere listening to their teachers followed by drill." (Gandhi and Varma 2007, p. 27). The teachers, thus, should not only make dynamic changes to her/his pedagogy based on the EA; the teacher and the learners should, in fact, work on the errors together. Classes spent on just discussion of errors are bound to reap benefits in the long term.
- **Teacher as Researcher:** Teachers, apart from working in their individual spaces, they can also make errors as the points of discussion in teacher meetings. "Tasks during teacher meetings involved thinking about students' responses and unpacking students' thinking in their (incorrect and correct) explanations" (Takker 2015, p. 3272). Different learners can show different mathematical reasoning even if they end up reaching the same correct or incorrect answer. Discussion of these different reasoning paths can help teachers think deeper, and motivate the teacher to become metacognitive about their own pedagogy. According to Takker (2015):

The discussions around the task includes talking about the errors, reasons for the responses, information they convey about students' knowledge or difficulty, and exploring connections between different topic areas of mathematics to identify possible thinking trajectories that students' might take with this kind of thinking. Teachers were engaged in the process of creating problems which would address different kinds of students' thinking. (p. 3272)

Errors have the potential to uncover a lot about the learner's mathematical knowledge. Each right and wrong step made by the learner will tell us more than the final right or wrong answer.

- **Space to Learners:** Learners should be given a non-judgemental platform to try and exhibit their mathematical thinking, and commit errors freely in the process of learning. "In the process of coming to know something it is likely that most of us will not achieve success every time." (Holt 1991 as cited in Collins et al. 2001, p. 17). They should be made to believe that it is okay to go wrong. In fact, our classrooms should be equally accommodating of errors, and alternative conceptions, rather than just being limited to promoting only expected procedures. The stigma of labelling, attached with the failure of doing mathematics correctly, should be completely eradicated from mathematics classrooms. Each learner contributes something in mathematics class and they should be provided interesting opportunities which excites them about their work (Boaler 2015). "Teachers can teach and train students to convert failure into future successes by doing an error analysis." (Gandhi and Varma 2007, p. 35). The learners may be given exposure to a framework for Error Analysis so that they may try to identify the reasons of errors on their own. Then they will be self-regulated learners in true sense and would develop metacognitive skills required for mathematical learning.
- **Mathematical Learning is a Process:** "Learning to think mathematically involves a great deal more than having large amounts of knowledge. It rather, includes a flexible spectrum of behaviour that promotes mathematical thinking which subsequently crystallizes into individual's performance in mathematics." (Gandhi and Varma 2007, p. 27). The over emphasis on the end product, in the learning of mathematics, should be replaced with a focus on the process and its reasoning. The 'why' is as important as 'how' and 'what' in mathematical learning. Process based classrooms are key to promote mathematical learning in the true sense. "Children need to solve ill-structured problems, to ask many forms of questions, to draw and visualize maths, and adapt and apply methods" (Boaler 2009, p. 13 as cited in Borasi 1994, p. 167). They should be able to justify and give reasons for mathematical solutions in forms of pictures, icons, or symbols.

Concluding Thoughts

The common practice in the mathematics classroom is to discard errors as pieces of waste. This chapter exhibits exploration of an error analysis method adapted from Newman's framework. In the study discussed here, the NEA framework has acted as a springboard on which the idea of an error analysis as pedagogy is researched. The underlying idea is to understand and appreciate error analysis as a pedagogic tool, and involving both learners and teachers in the process. The vignettes

presented here bring out the lived experiences of both the (pre-service) teachers and the (students) learners, highlighting that mathematical learning should focus on masked processes rather than the product. Also, errors are reflections of the mathematical thinking of learners, and they convey meaning relevant to the context of the learner, which is different from the meaning conveyed by the context of the teacher (Collins et al. 2001).

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Chapter 8

PCK: A Key to Meaningful Learning in Science Classrooms



Mamta Rajput

Introduction

It is generally believed that the growth and development of a nation is dependent on the advancements made in the field of science and technology of that particular nation. An equally important role in the development of the nation is played by those individuals who have the ability to think critically, creatively, and differently, who can innovate and discover and who are ever ready to find out the solutions to the problems which a nation encounters. These individuals can only be nurtured by providing them an education that respects the uniqueness of each learner, and fosters their active participation in the learning process. Knowledge is not just transferred to them, but their experiences, and their divergent thinking, are respected, integrated, and intertwined to help them construct knowledge.

Recognizing the importance of science education in developing the ability of logical reasoning, curiosity, creativity, positive attitude, and problem-solving approach in individuals, while participating in the economic growth and social welfare of the country, it becomes imperative to focus on the quality of science education in schools. This, in turn, depends largely on the quality of science teachers.

A genuine effort and thought, in the direction of providing quality science education, inspired different educationists to improve the curriculum, textbooks, assessment procedures, and the like, for science teaching and learning. However, it is observed that the major responsibility of delivering quality science education in the classroom rests on the shoulders of the teachers. It is the teacher who decides what examples, analogies, instructional strategies, resources, assessment procedures, and curricular knowledge they can utilize. In order to be effective, she needs to base the examples on the interest and cognitive levels of the students. This will

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facilitate the learning of students, coupled with meaningful learning outcomes. If teachers play such a crucial role in the learning of students, the questions that come naturally to our mind is: What do the science teachers know, that informs, directs, and monitors their actions in forging meaningful learning amongst the students? Second, what comprises the specialized knowledge base of science teaching? Last, what defines the distinctive knowledge base which science teachers possess that individuates them from other professionals and subject specialists?

As psychological perspectives shifted from behaviourism to cognitivism in the 1970s, research on the teacher's behaviour and attitudes began to focus more and more on the cognitive processes of the teachers rather than on their behaviours. Shulman's (1986), seminal works on the systematic study of the knowledge underlying teaching, is noteworthy in this context. He posits a model of teachers knowledge base in which he has identified seven categories of knowledge base for teaching: content knowledge; general pedagogical knowledge; curriculum knowledge; pedagogical content knowledge; knowledge of learners and their characteristics; knowledge of educational contexts; and knowledge of educational ends, purposes, and values, as well as their philosophical and historical grounds. Of these seven categories, Pedagogical Content Knowledge was of special interest to Shulman.

Pedagogical Content Knowledge

Shulman (1986) introduced the concept of Pedagogical Content Knowledge (PCK) to understand the specific knowledge that is needed for teaching. He stated that, while interpreting and transforming subject matter knowledge into pedagogically powerful forms, the teacher makes the content comprehensible to learners. Thus, pedagogical content knowledge includes the teacher's knowledge of how particular subject topics can be organized, represented, and adapted to the diverse interests and abilities of learners, while clarifying which instructional strategies to choose, what examples, analogies will work well with the students, what misconceptions and learning difficulties the students have, what resources can be used, and how to assess what the students have learnt.

It was observed by different scholars that knowing the subject matter well or knowing the pedagogy well doesn't make one a good teacher and, sometimes, adding two knowledge disciplines together also doesn't make one a good teacher. Shulman argued that, having knowledge of subject matter and general pedagogical strategies, though necessary, were not sufficient for capturing the knowledge of good teachers. To characterize the complex ways in which teachers think about how particular content should be taught, he argued in favour of 'pedagogical content knowledge', as the knowledge that deals with the teaching process, including "the ways of representing and formulating the subject, which makes it comprehensible to others" (p. 9). To ensure success of teachers, it would be essential to confront, both

issues of content and pedagogy, simultaneously by embodying “the aspects of content most germane to its teachability” (Shulman 1986, p. 9 and Koehler 2011).

Various teacher educators and researchers have identified PCK as a critical component of the knowledge needed to teach. “Our position is that there is value, both conceptually and practically, in defining pedagogical content knowledge as a separate domain of knowledge for teaching. Its conceptualization as knowledge that results from a transformation of other domains of knowledge signals that it is more than the sum of its parts, more than simply fitting together bits of knowledge from different domains. Practically, it has potential to define important dimensions of expertise in science teaching that can guide the focus and design of pre-service and in-service teacher education programs. Further, our conceptualization of the components of pedagogical content knowledge provides an important conceptual tool for helping teachers of science in constructing specific knowledge that they need to be effective teachers” (Magnusson et al. 1999, p. 116).

Components and Nature of PCK

Most of the researchers agreed with Shulman’s two key components “knowledge of instructional strategies and knowledge of students” and elaborated upon the concept of PCK by either adding or modifying components in the initial conceptualization of PCK, based on their beliefs or the findings from empirical studies. Thus, it was observed that, apart from two key components; ‘knowledge of instructional strategies’ and ‘knowledge of students’, the other components of PCK which different researchers included in their conceptualization of PCK were: knowledge of assessment, knowledge of science curriculum, knowledge of context, knowledge of one’s teaching purposes, and knowledge of resources.

Further, researchers argued that PCK is not simply accumulation of some cognitive components; it may include affective components: for instance, beliefs (Magnusson et al. 1999) and self-efficacy (Park and Oliver 2008a, b). The value of PCK lies in viewing it as a whole—in which different components interact with each other in highly complex ways—rather than separate components. The integration of components in a synchronized fashion results in development of PCK and the reciprocal interaction of its components is an indication of robust PCK (Fernandez-Balboa and Stiehl 1995; Magnusson et al. 1999). Thus, it can be concluded that PCK is the integrated set of knowledge, concepts, beliefs, and values, that teachers develop in the context of the teaching situation. (Fernandez-Balboa and Stiehl 1995; Gess-Newsome 1999; Loughran et al. 2004). While “pre-service or beginning teachers usually have limited or minimal PCK, experienced teachers possess an integrated and developed understanding of teaching” (Lee et al. 2007).

Research Study: To Explore and Understand the PCK of In-Service Science Teachers

In the study, which will be described in this chapter, the researcher attempted to explore and understand PCK of some of the in-service science teachers and the relationship of teachers' PCK to the classroom behaviour of students and their learning in this new age classroom. If the knowledge and practices of some experienced science teachers are documented, it may help other, less experienced or pre-service, teachers to reflect, analyze, and improve upon their science teaching. "If expertise can be captured and portrayed it may then be passed on to inexperienced teachers and thus assist them in their progress towards enhanced competence in teaching" (Magnusson et al. 1999).

Review of Related Literature

Fernandez-Balboa and Jim Stiehl (1995) tried to understand the generic nature of PCK among exceptional university level teachers, analyzing generic PCK in professors across several fields (biology, business, education, and the like). Data was obtained from phenomenological interviews with ten experienced university professors. The results indicated the presence of five generic PCK components: knowledge about (a) the subject matter, (b) the students, (c) numerous instructional strategies, (d) the teaching context, and (e) one's teaching purposes.

Van Der Valk and Broekman (1999), investigated the PCK of five pre-service science teachers, on the topic 'Combustion', through lesson-preparation method, followed by an interview. The result indicated that the participants did indeed show a great deal of PCK. All five aspects of PCK (pupils' prior knowledge, pupils' difficulties, relevant representations, instructional strategy, and student activities) could be ascertained. Loughran et al. (2004) examined the development of ways of documenting and portraying the PCK of science teachers. As a result of a longitudinal study of the PCK of science teachers, a method is developed for capturing and portraying PCK that comprises two important elements. The first is linked to the particular science content, termed 'Content Representation' (CoRe), and the second is linked to teaching practice, termed 'Professional and Pedagogical experience Repertoire' (PaP-eR). Data was collected by conducting individual interviews with twenty-four secondary science teachers, and classroom observations with twelve secondary science teachers, at different points of time. The study includes a full CoRe and one PaP-eR and fully demonstrates how these elements interact to portray science teachers' PCK.

Lee and Luft (2008) investigated how experienced secondary science teachers, serving as mentors to young science teachers, represent PCK. Data included semi-structured interviews, classroom observations, lesson plans, and reflective summaries of four secondary science teachers. The findings of this study reveal that

the PCK of experienced teachers commonly includes seven components of PCK: knowledge of (1) science; (2) goals; (3) students; (4) curriculum organization; (5) assessment strategies; (6) teaching strategies; and (7) resources, with specific elements within each component. Based on the interpretation of the data in the study, the seven components were transformed into each teacher's PCK, representing his or her own expertise, which ultimately functioned as a filter to determine his or her instructional decisions and actions. The conceptualization of PCK by each teacher varied, depending upon his or her individual background and teaching situation. This study shows that the concept of PCK is not only a unique knowledge required for teaching science, but also the application of that knowledge into teaching practice.

Loughran et al. (2008), explored the outcomes when a teacher educator explicitly introduces student-teachers to ideas about PCK, through the use of a CoRes and PaP-eRs conceptualization. An important outcome of this study was that the student-teacher participants came to see PCK, not so much as an educational theory, but as a way of looking into how they might develop their own professional knowledge of practice; further, the participants attempted to better align the content matter to be taught with pedagogy, so that the content might be understood by their students. Lankford (2010), tried to determine the pedagogical content knowledge (PCK) for teaching diffusion and osmosis of six experienced biology teachers and to reveal how topic-specific PCK informs teacher practice. Magnusson et al. (1999) PCK model served as the theoretical framework for the study. Data sources included observations of two consecutive lessons, three semi-structured interviews, lesson plans, and student handouts. Data analysis indicated five of the six teachers had a constructivist orientation to science teaching and engaged students in explorations of diffusion and osmosis prior to introducing new concepts to students. Explanations for diffusion and osmosis were based upon students' observations and experiences during explorations. All six teachers used representations at the molecular, cellular, and plant organ levels to serve as foci for explorations of diffusion and osmosis. The three potential learning difficulties identified by the teachers included: (a) understanding vocabulary terms, (b) predicting the direction of osmosis, and (c) identifying random molecular motion as the driving force for diffusion and osmosis. Participants used student predictions as formative assessments to reveal misconceptions before instruction, and to evaluate conceptual understanding during instruction.

Alonzo et al. (2012), found out the relationship of PCK to the learning of students by exploring PCK of two German physics teachers during classroom instruction in consecutive lessons on optics. They showed how video analysis can be used to gather evidence for one aspect of teachers PCK: their use of content knowledge in interactions with the students. They identified three potentially important characteristics of this aspect of PCK: flexibility, richness, and learner centeredness. By contrasting teachers with high and low gains in the knowledge and learning of students, they explored potential mechanisms by which this aspect of PCK might affect students' outcomes. Park and Chen (2012) explored the nature of the integration of the five components of PCK (Magnusson's components) in the context of

the photosynthesis and heredity instruction of four teachers who were working at the same high school with the same curricular materials. The teaching experience of all the four teachers ranged from 2 to 43 years. Major data sources included non-participant classroom observations, semi-structured interviews, lesson plans, instructional materials, and work samples of students. In order to capture the nature and dynamics of the integration process of the PCK components, data was analyzed through three approaches: (a) in-depth analysis of explicit PCK (Park and Oliver 2008a, as cited in Park and Chen 2012); (b) enumerative approach (LeCompte and Preissle 1993, as cited in Park and Chen 2012); and (c) the constant comparative methods (Strauss and Corbin 1990, as cited in Park and Chen 2012). Data analysis indicated five salient features of the integration of the PCK components: (a) the integration of the components was idiosyncratic and topic specific; (b) knowledge of student understanding and knowledge of instructional strategies and representation were central in the integration; (c) knowledge of science curriculum and knowledge of assessment of science learning had the most limited connection with other components; (d) knowledge of assessment of science learning was more often connected with knowledge of the understanding of students, and knowledge of instructional strategies and representation, than with the other components; and (e) Didactic Orientations toward Teaching Science directed knowledge of instructional strategies and representation, inhibiting its connection with other components. This study highlights that the quality of PCK depends on the coherence among the components as well as the strength of individual components.

Methodology

The nature of the study required the researcher to gain an in-depth understanding of the teachers' knowledge of science teaching (which is considered to be tacit), their beliefs, and practices of teaching and provide an explanation for the kind of Pedagogical Content Knowledge the teachers possessed. Such an in-depth understanding could be elicited through qualitative inquiry. To gain an understanding of the science teachers' PCK, they were observed for four to five classes while teaching in their respective schools. Observations alone were not sufficient enough to know about the teachers' PCK, therefore teachers were also interviewed at length to explore the various aspects of their PCK; their lesson plans/teacher's diary/planned assessment worksheets for the students were also analyzed to build a complete understanding of the science teachers' PCK.

The Sample

The sample consisted of ten in-service female science teachers teaching science from the Classes Sixth to Tenth. Their teaching experience ranged from approximately 1 to 30 years. The teachers were selected from different schools which

included Government Schools and Public schools, which in India, are non-government, privately funded schools.

Data Analysis Procedure

To begin with the data analysis procedure, the information from in-service science teachers' classroom observations, interview scripts, their lesson plans/teachers' diary/planned assessment worksheets for the students was recorded and analyzed on the basis of Magnusson's five components of PCK: (1) knowledge of representations and instructional strategies, (2) knowledge of students' understanding of science, (3) knowledge of assessment, (4) knowledge of curriculum, and (5) orientations towards science teaching, along with the addition of one more component (knowledge of resources). The researcher attempted to study the interaction of different components of PCK in science teachers' by analyzing the data through three approaches used by Park and Chen (2012) in their study 'Mapping out the Integration of PCK Components: Examples from High School Class Biology Classrooms'. The three approaches used were:

- (a) In-depth analysis of explicit PCK (Park and Oliver 2008a),
- (b) Enumerative approach (LeCompte and Preissle 1993), and
- (c) The constant comparative methods (Strauss and Corbin 1990).

Park and Chen's (2012) pentagon model of PCK (which was modified according to the need of the study) provided the conceptual framework for the present study. Also incorporated were Magnusson's five components of PCK in their model. Magnusson's five components of PCK include: (a) orientations toward science teaching, (b) knowledge and beliefs about science curriculum, (c) knowledge and beliefs about assessment in science, (d) knowledge and beliefs about students' understanding of specific science topics, and (e) knowledge and beliefs about instructional strategies for teaching science" (1999, p. 97). The researchers in the study added one more component of PCK 'knowledge of resources' which emerged as one of the important component contributing to the teacher's PCK in (Lee and Luft 2008) study. According to the science teachers, "Knowledge of Resources" had impacted their curriculum organization, selection of teaching strategies, and use of assessments (Lee and Luft 2008).

In the present study, the researcher increased the validity of the findings by achieving triangulation, through employing multiple sources for collecting data, including: (a) semi-structured interviews with participants; (b) classroom observations of the participants; and (c) lesson plans/teachers' diary of the participants.

Findings

As a result of the analysis of classroom observations, semi-structured interviews and planned assessment worksheet for the students/lesson plans/teachers' diary of the in-service science teachers, the researcher found that the PCK of science teachers is not merely the amount of knowledge in a number of component categories, it is also about the quality of that knowledge and how the knowledge of different components is integrated in the teacher's PCK. It was also observed that the PCK of science teachers directly impacts the learning of students in the classroom. Hence, on the basis of the kind of knowledge contained in different components of the PCK of science teachers and the interaction of different components with each other; the PCK of science teachers has been categorized into two types: Type A and Type B.

PCK of Type A: Five teachers out of the ten teachers studied were found to possess Type A PCK. The teaching experience of these teachers ranged from eight years to 26 years and they were found to enjoy teaching science. The teachers worked in an environment which gave them complete academic freedom to innovate and experiment. The teacher to student ratio was approximately 1:40, which the teachers felt was quite manageable in conducting hands-on science activities and group discussions with the students in the class.

A brief description of the knowledge of different components of PCK possessed by these science teachers is as follows:

Knowledge of Instructional Strategies: The teachers' use of instructional strategies was governed by their belief in meaningful science education. The teachers tried to actively engage the students through hands-on activities, inquiry, exploration, questioning, debates, and the like, leading to meaningful understanding of science concepts. The classes related to activities, or to use of smart boards, were held in the science activity room while the rest of the classes were held in regular classrooms. For example, in one of the classes, the students of Class Six were made to sit in groups and given the instructions for the test of starch to be performed by the students themselves. Students took out food stuff from their lunchbox, conducted the test of starch on these, recorded the observations in the form of a table, and drew conclusions. Similarly, they performed the test of fats themselves.

In another class, the teacher discussed with the students different forces in action which they saw around them and then showed them a short video having some forces in action. The students were asked to identify different forces, which they saw in the video, and were asked to write a story in which all the forces they had learnt would appear. The activities designed to clarify the concepts of the upper primary science syllabus were first tested by the teachers before being carried out by the students. Also included were the activities which developed skills like listening, following instructions (written/oral), and learning to work in cooperative groups. The idea was to have fun while doing science. Opportunity was given to the students to arrive at the concepts themselves using inquiry, discovery, field trips, and hands-on activities. The role of the teacher was to help the students in

understanding concepts by asking them probing questions which would stimulate students to think deeply, rationally, and logically about the concept.

Knowledge of Students' Understanding of Science: It was observed that the teachers bonded very well with their students. The teachers knew their students' strengths and weaknesses and guided them accordingly. They always looked for purposes, objectives, and meaningfulness of science teaching from students' point of view.

The teachers were never observed raising their voice in the class; they would simply raise their hands to get the attention of the students in the class. The students were given the freedom to make mistakes while exploring and conducting activities and thinking independently. The teachers encouraged the students to share their ideas freely in the class without any fear of being wrong and encouraged them to be familiar with the concept in their own language first, and later on use scientific vocabulary.

Before teaching a concept, the previous knowledge of students was thoroughly revised so that the students would not face any problem in understanding the new concept. The teachers were found to be aware of the students' misconceptions related to the topic and helped the students in dealing with them. For example, while discussing the topic of 'teeth' the teacher discussed the misconceptions related to 'wisdom tooth' and also asked the students to verify it from their parents and grandparents. Special care was taken of the students with special needs by the teachers by modifying activities, assessment plan, and worksheets for them, so that these students could understand and do the work easily. It was observed that these students were well-accepted in their groups and were helped by their peers and teachers in the teaching-learning processes. According to the teachers, knowing the socio-economic background of the students helped them to choose examples, analogies, and incidents from real life which helped in making the concept understandable to the students. The teachers took care of students' difficulties in the class and tried to solve it within the class time period and, if need be, after the class in remedial classes.

Knowledge of Assessment: Along with the assessment of cognitive abilities, students' psychomotor skills, problem solving skills, science process skills, their creativity, and attitudes were also assessed in science. The teachers believed in giving meaningful assessment tasks which could help the learners in knowing their strengths and weaknesses with respect to the learning of the concept and also helped the teachers in diagnosing the learning difficulties of their students. For example, while dealing with the topic of Food and Nutrition, the students were asked to prepare a menu card of their favourite eating items. The students had to mention what all nutrients a particular eatable contains and also compare the two eatables with respect to their nutritive value. The teachers shared with the researcher that the objective of the above mentioned assessment task was to make students capable of differentiating healthy foods with junk food. The science processing skills of the students were assessed when they were doing hands-on activities by providing them a worksheet which had various items related to the assessment of science process skills. The creativity of the students was assessed by giving them some experiments

to design or by asking them to write a story. For example, while dealing with the concept of forces in action the students were asked to write a story covering all the forces in action which they saw in the video and which they had studied so far.

Knowledge of Resources: The teachers stressed that knowledge of resources helped them in planning and developing teaching strategies effectively. Some of the resources which teachers used were:

- School resources: Subject Laboratories with the latest equipment for Physics, Chemistry, Biology, Computers, and Home Science; use of technology to facilitate learning; materials, for hand-on activities; and a well-stocked Library, with teachers referring to various science magazines, journal articles, and other books for planning science activities and supplementing the information given in the textbook.
- Community resources: Field trips to science centres, museums, botanical gardens, national parks, and the like. According to the teachers, knowing many local organizations and facilities related to the science field provides a big support in teaching science. Talks by eminent people in the field of science were organized. Use of newspaper articles, and the like, was another element that teachers used.

Knowledge of Science Curriculum: The teachers were aware of the position paper on science teaching (National Curriculum Framework 2005) and tried to organize their teaching according to the objectives and methodology suggested in it. It was observed that the teachers kept themselves updated with respect to the changes and new ideas in the field of science education. Through group meetings, group discussions, seminars, and workshops, the teachers used to gain knowledge of science curriculum updates and tried to implement these in their teaching processes.

Orientations to Teaching Science: The teachers viewed science as a process of knowing how scientific knowledge is gained, rather than simply looking at it as a body of knowledge consisting of scientific facts, principles, laws, and theories. They were of the opinion that knowing and learning the processes of science helped the students in carrying out investigations systematically and also helped them to know how scientific knowledge is acquired. The teachers considered science as a means to foster the natural curiosity and creativity of the child, so they encouraged students to ask questions in the class, related to the concept, which helped them to enter into the depth of the concept or the phenomenon, which they were studying, and, thus, led to conceptual clarity. The teachers wanted their students to discover, to explore, to recognize, and be adept in application of science in everyday activities. According to the teachers, relating the daily life of students with science, made the subject more meaningful and relevant for the students.

Interaction of Different Components of PCK of Type A

It was observed that the science teachers' PCK was a complex interplay of all the six components which could be diagrammatically shown as follows (Fig. 8.1):

- OTS* Orientation to Teaching Science
KSC Knowledge of Science Curriculum
KSU Knowledge of Students' Understanding of Science;
KA Knowledge of Assessment
KR Knowledge of Resources
KIS Knowledge of Instructional Strategies.

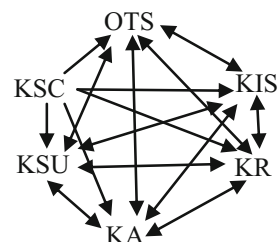
A double-headed arrow between the two components indicates that they influenced each other.

A single-headed arrow between two components indicates that the component at the tail of the arrow influences the component at the head of the arrow.

The kind of orientations to teaching science (OTS), which the science teachers possessed, influenced the teachers' knowledge of other components such as KIS, KSU, KA, and KR. It was observed that the teachers used to plan their instructional strategies, assessment exercises, resources to be used, according to the orientations they had with respect to science teaching, and also dealt with the students' needs, problems, and difficulties, accordingly. As the teachers continuously reflected on their teaching practices so any change in KIS, KSU, KA and KR would result in the change in the science teachers' orientations also.

The teachers used the knowledge of science curriculum to get some guidance with respect to KIS, KA, KSU, KR and OTS; so it was observed that the knowledge of KSC influenced the science teacher's KIS, KA, KSU, KR and OTS and hence a single arrow existed between KSC and KIS, KA, KSU, KR and OTS, but the vice versa relation could not be observed. The reason for this was that the teachers felt that it was outside their purview to make any change in the science curriculum. As the teachers were found to work in groups, they also kept themselves updated in the area of science education by connecting themselves to technology, attending seminars and workshops, reading books, journals, and the like. The teachers were in the habit of reflecting on their teaching practices, and modified their KIS, KSU, KR, KA, OTS from time to time, while change in even one component of PCK, influenced the change in the other components, resulting in the hexagonal model, representing the PCK of these science teachers.

Fig. 8.1 Interaction of different components of PCK (in PCK of Type A)



Analysis of the Relationship of PCK to Students' Classroom Behaviour and Learning: Recalling students' science activity classes, all the hands-on activity classes helped the students to acquire science process skills such as observation, classification, experimenting, recording, hypothesizing, drawing conclusions, and the like. Students learnt to conceptualize through systematic investigations, and they learnt to handle apparatus as well. As the students carried out the activities in groups, they learnt to share resources and, thus, learnt about cooperation rather than comparison. The science classes which were led by an inquiry-based approach, helped the students in thinking critically, rationally and logically about the concept. The students learnt to raise questions fearlessly and hence were helped in nurturing their curiosity. The practice of showing different videos based on the concept, teaching with the help of different educational modules, and then asking questions based on it, or asking students to incorporate a commentary of the video/ educational module, while showing it again, helped the students in developing their listening skills as well as their ability to focus and concentrate on what is being shown. Qualitative feedback on assessments, coupled with the quantitative one, helped the students to be intrinsically motivated to learn. The students enjoyed their learning rather than considering it a burden.

PCK of Type B: Five teachers out of the ten teachers studied were found to possess Type B PCK. The teaching experience of these teachers ranged from five years to thirty years. The teachers worked in an environment where the teacher to student ratio never exceeded 1:40. In the science classes, the science textbook was considered the means and the end to science teaching; teaching it word-for-word was considered sufficient for science teaching, so no need was felt by the teachers to plan the science content or to discuss issues related to science teaching with other science teachers. Even if some sort of planning was done, it was only to maintain the teacher's diary. The teachers didn't enjoy teaching science to the students. With respect to the facilities such as science laboratories, library, and use of technology, the teachers had limited access to them. Moreover, where available, the teachers were not in the habit of using these facilities in science teaching. Science teaching was not considered to be different from the teaching of other subjects. The idea of science teaching was nothing but completing the syllabus through the textbook. A brief description of the knowledge of different components of PCK possessed by these science teachers is as follows.

Knowledge of Instructional Strategies

The students were asked to read the content in turn from the book and were made to mark important points, definitions, and answers to some questions. Occasionally, some explanation was provided by the teachers for the chapter which was being read. Simple activities/experiments given in a particular chapter were also studied. Their observations and results were dictated; for example, without even doing the activity of crystallization given in the textbook, students were made to write the

crystallization of CuSO_4 in their notebook and the observations were dictated to them.

A lot of emphasis was laid on memorization. In one of the classes the teacher stressed: be careful while learning the formulas of O_2 and CO_2 ; 2 is always written below O, do not put it adjacent to O or C, otherwise its meaning will change completely. But what does this 2 signify? Why below? Why not adjacent? Questions like this were not discussed in the class. Although the teacher's diary did mention discussion and demonstration of some experiments, as instructional strategies, that would be used in transacting science lessons, the classroom reality was different from what was written in the diary; discussions and demonstrations were never held. In fact lecture method was also used very rarely to transact the science content in the classes. The kind of questions which the teachers asked the students while the chapter was being read were simply factual in nature which required them to recall what they studied in the class. The teachers did not ask any questions which required the students to think or probe the concept in greater depth.

Knowledge of Students' Understanding of Science: The teachers viewed science teaching to be completely the teacher's affair; that it is the teachers alone who have to put in so much of effort to teach in the class. The students have to just listen carefully in the class and learn some questions for exams. So the teachers didn't feel the need to understand the needs, interests, problems, or individual needs of students, nor their strengths and weaknesses. Most of the times, the teachers were observed snubbing the students in the class on one pretext or the other. The teachers never encouraged students to share their ideas or to ask questions in the class and, while answering a question asked by the teacher, the students did not have space to learn from errors; if they gave wrong answers, they were severely reprimanded by the teacher. The students were required to just sit quietly in class. The teachers were found to be aware of the student's socioeconomic background, but it was used negatively in dealing with the students within the classroom. They were found to be unaware of the term 'misconceptions'. How much the students knew from their previous classes and how much they were ready for in their new classes was never given importance. One of the teachers shared: "I have already completed the concepts of density and pressure in the ninth class; by mistake the pre-service teacher also did the same concepts with them, even then, when the students were asked questions based on these concepts they could not answer, so there is no sense in trying to determine their previous knowledge, as they don't remember what they are studying right now." The teachers knew that students found it difficult to read and comprehend the science lesson from the book, were able to understand the language of the questions given in the examinations, and were unable to write answers in the notebook, or in examinations. The teachers felt quite helpless in resolving these difficulties as the teachers felt that reading and writing are such basic steps of schooling that, if they started to devote their time to teach these basic skills in secondary classes, they would not be able to complete the syllabus.

Knowledge of Assessment: These science teachers were found to be more comfortable with assessing the knowledge of students only in the form of paper and pencil tests. In fact, the other cognitive abilities such as understanding, application,

analysis, synthesis, and evaluation were not assessed. Rarely would the teachers include questions of understanding and application in the written test. The idea of assessing the psychomotor skills, process skills, and creativity of students, as mandated by CCE (continuous and comprehensive evaluation), didn't go down well with the teachers. They found the CCE system of evaluation inappropriate for their students as they believed that, earlier, students could be made to study because of the fear of failure in exams, but that now, with CCE being put into practice, students had become more callous in their attitude towards studies, as they know that by superficially doing some activities or projects they could easily get passing marks. Hence, it was observed that the teachers considered CCE an extra burden which required additional effort, time, and a lot of record keeping. For this reason the teachers never made efforts to understand the objectives of assessing students through formative and summative assessments. The assessment tasks given by the teachers (making models and projects) were more for the purpose of keeping CCE records rather than to bring out any kind of learning in the students with respect to science; and these tasks were rarely integrated into the teaching learning process. Students were just asked to bring any model or project related to science; its purpose and relevance was not made clear to the students.

Knowledge of Resources: Although these teachers had access to science laboratories in the schools, according to the teachers, there was no point taking the children to the laboratories, as more than half of the period was wasted. Moreover, there was always the fear that the students may break instruments in the laboratory, or may spill some chemical. The teachers further shared with the researcher that they have no laboratory assistant so it becomes very difficult for them to handle all the things on their own. In response to the question of doing some activities in the class, the teachers responded that organizing activities for learning in the class would mean lot of chaos in the class. Moreover, they would not be able to finish their syllabus on time. The organization of field trips were an exercise in futility, as the visit was considered to be a picnic rather than a learning experience.

Knowledge of Science Curriculum: The teachers were only familiar with science textbooks using the term 'curriculum' rather than syllabus. They were not aware of any national curriculum related to science teaching and showed no interest in knowing its importance and relevance. The science textbooks were the ultimate guide for them to teach science.

Orientations to Teaching Science: The science teachers viewed science as an important subject which the students must study. The teachers were not in the habit of reflecting or analyzing what they were teaching, or why they were teaching, and what objective would be achieved. Completing the syllabus, dictating questions and answers, and maintaining the Continuous and Comprehensive Evaluation records, was the objective of science teaching for the teachers. Though some teachers revealed that learning science would enable the learners to know themselves as well as their environment in a better manner, they expressed their helplessness in even bringing their learners to this level, due to the students' inability to read or write properly. The teachers felt that the objectives of teaching science that they wrote in their lesson plans during pre-service education, had no importance for them, once

they became a regular teacher. The low cognitive level of students, the lack of resources, and other administrative duties in the school, left them with little time to pursue teaching with wholehearted commitment. Moreover, completing the syllabus itself had become an uphill task for the teachers; making them take recourse to presenting information through reading of the textbook, expecting them to memorize it by rote.

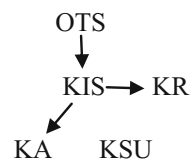
Analysis of the Interaction of the Components of PCK of Type B

The PCK of these science teachers was found to be an interplay of the four components OTS, KA, KR and KIS, which could be represented as (Fig. 8.2):

- OTS* Orientation to Teaching Science
KSU Knowledge of Students' Understanding of Science
KA Knowledge of Assessment
KIS Knowledge of Instructional Strategies
KR Knowledge of Resources.

Since the teachers considered the textbook to be the only representation of science curriculum, one component, 'knowledge of science curriculum', didn't even form a part of the PCK of these science teachers. One-way interaction of OTS with KIS indicated that the teachers' orientations to teaching science influenced their knowledge of instructional strategies. Since the science teachers' orientations were mainly to transmit the facts of science, the teachers used mainly textbook-reading method for teaching science in the class; the textbook was the major resource of teaching science. The teachers related KIS, to the type of questions that would be part of examinations from the content which was being studied, what to write in an answer and how much to write. No connection was observed between KSU, and KA or KIS, indicating that the students' needs, interests, different learning abilities, and the like, were not taken care of while choosing instructional strategies or while assessing them. The teachers were not in the habit of reflecting on their classes and, thus, could never think of bringing some change in their teaching.

Fig. 8.2 Interaction of different components of PCK (in PCK of type B)



Analysis of the Relationship of PCK to Classroom Behaviour and Learning of Students: This kind of PCK resulted in only passive learning among the students. The students were never observed asking questions or displaying any kind of curiosity. Most of the times they were found looking here and there in the class, or fighting with each other or looking out of the window. The students never got the chance to develop psychomotor skills, thinking skills, science process skills, problem solving skills, creativity, and innovativeness.

Conclusions

The findings revealed that in PCK of Type A, the students showed remarkable interest and enthusiasm towards their science classes, never showed any sign of indiscipline or inattentiveness in their science classes, asked questions fearlessly in the class, tried to inquire about the concept, learnt various science process skills and psychomotor skills, as the teachers used learner-centred strategies to transact science content in the class, showed their sensitivity towards students' needs, interest, socio-economic background, learning requirements and difficulties, and planned the assessments according to their cognitive, affective, psychomotor, and creative abilities.

Looking at the learning of students, it can be concluded that to teach science effectively the teachers need to possess knowledge with respect to all the components of PCK, keeping in mind the needs, interests, socio economic background, learning requirements, strengths and weaknesses, and the like, of the students, as seen in the case of PCK of Type A. Mere possession of knowledge is not sufficient; knowledge from all the components must interact with each other and collectively form the PCK of science teachers, and the knowledge must be put to practice in all the classes. The factors which governed the development of PCK for practicing effective science teaching can be cultivated by:

- (a) **Initiating change in the orientation of the teachers towards science teaching.** This can be actualized through a myriad of approaches: the teachers must visit those schools where meaningful science education transpires with minimum possible resources, facilities, and infrastructure; creating possibilities for teachers to work with highly motivated, innovative, and creative people who can act as 'mentors' and can help the teachers in planning their science lessons, in thinking of alternatives to resources and innovative ideas of science teaching and can motivate them for good science teaching.
- (b) **Developing the habit of reflection in the teachers.** It was found that the science teachers who were in the habit of reflecting upon their classroom processes during and after the class, always either tried to strengthen the strategies which went well for the students or tried to modify those strategies which didn't help the students much in understanding the science concepts,

thus helped the teachers to be dynamic with respect to their knowledge of science teaching rather than being static.

- (c) **Developing the habit of documenting scientific ideas correctly.** It has been observed that the science teachers who documented their lesson plans, students' assessment plans, proceedings of science group meetings, teachers' reflections, and the like, were consciously aware of the knowledge they were using to teach science, helping them to proceed systematically and with clarity of thought in their class.
- (d) **Encouraging the teachers to plan their science lessons and discuss innovative ideas of science teaching in groups.** It was observed that the planning of science activities, students assessment, sharing of problems related to science teaching, innovative ideas for science teaching, can be discussed in group meetings. These initiatives helped the teachers in developing their knowledge in the context of all the components of PCK, equipping them to teach effectively in the class.
- (e) **Providing good academic and professional environment to the teachers.** It was observed that the schools in which the teachers' individuality is respected by higher authorities and peers, are given the academic freedom to think creatively and innovatively, and are bolstered professionally through enrichment program, are the teachers whose PCK is greatly enhanced. Moreover, it was observed that the teachers' insights regarding effective science teaching, sensitivity towards students, teachers' passion and dedication towards science teaching, curiosity to learn, discover, explore the environment around, thinking of alternatives to resources and other facilities, and reflecting on the classroom processes, helped them in developing PCK for effective science teaching.

Certain implications have emanated from this study for building effective teacher education programs, and enrichment programs for in-service science teachers, for effective teaching of science to secondary science students.

Implications for Teacher Education Programs and Professional Development

One of the major implications of the concept of PCK in Pre-service teachers' education programmes is the urgency to bridge the gap between content and pedagogy. Rather than training the prospective teachers in general pedagogy, there is a need for building knowledge of different components of PCK with respect to different topics/concepts of secondary science. In order to foster effective teaching, "it is helpful for the teachers to focus on students' learning rather than teaching" (Schneider and Plasman 2011). Various workshops and seminars need to be organized on 'students' misconceptions and their learning difficulty' on different topics of science to gain knowledge of students' learning. The development of PCK should be an integral part of the pre-service teacher education curriculum. At level

of planning, PCK knowledge in pre-service teacher education programme should help the pre-service teachers to discuss their ideas in groups related to nature of science, curriculum, instructional strategies, resources, students' misconceptions, role of teacher and assessment while preparing lesson plans.

During Internship, pre-service teachers should get ample opportunities to interact and observe in-service teachers who are considered to have sound knowledge of PCK, while they are in action. These in-service teachers can mentor pre-service teachers to understand effectively various dimensions of PCK.

Different components of PCK can be used as specific tools to measure teachers' PCK and, accordingly, different workshops, seminars, field visits, and the like can be organized for the in-service secondary science teachers to develop their knowledge in specific components of PCK. Mere possession of knowledge is not sufficient; knowledge emanating from all the components must interact with each other and collectively to create PCK. Group and collaborative work needs to become an integral part of teacher education programs. Teachers of science can conduct group meetings for planning the teaching of scientific concepts, sharing innovative ideas, discussing conceptual problems, students' misconceptions and assessment procedures, and so on, with their colleagues. This is observed in PCK of Type A. "Moreover, it is essential that they develop the habit of reflecting on their teaching practices helping them to strengthen their good practices and to diagnose their weaknesses and difficulties" (Schneider and Plasman 2011). These measures will help them modify and develop their knowledge of science PCK.

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Chapter 9

Reflective Practices: Exploring Teacher Educators' Perceptions



Manisha Yadav

Introduction

Section 1

The question that I generally ask students is why do they want to become a teacher? They have a myriad of reasons, varying from their own commitment to the education of children, their desire to contribute to their personal well-being, the hope of working in a stable and respected profession, parental pressure, to a belief that teaching is a half-day job that is simple and undemanding. However, after experiencing the rigor and challenges of school internship, students come to the conclusion that teaching is a nuanced process and influenced by social, economic, and political factors that need to be considered by a teacher in the school system, along with the responsibility of curriculum transaction.

Teaching and learning are not merely mechanical processes of receiving and transmitting knowledge, but are multidimensional and extremely complex in nature. The National Curriculum Framework published by National Council for Educational Research and Training states: “making meaning and developing the capacity of abstract thinking, reflection and work are the most important aspects of learning” (2005, 15). An individual who is involved in teaching needs to address certain questions to make the process meaningful and engaging personally as well as professionally. The assumptions and perception of a teacher regarding the learner, and the process of teaching and learning, make the act of reflection a critical aspect of teaching. Reflection is understood to be one’s ability to look back over what has been done in order to understand how to intelligently deal with future experiences.

I will begin by describing a teaching situation from two different perspectives. The teacher’s role in the two situations needs to be examined critically.

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Situation: Anita, a newly appointed social science teacher in an elite school of Delhi often faces a dilemma while teaching in the middle grades. The issue revolves around classroom management and syllabus completion; she often struggles to take decisions. Very often, she enters the class, having decided on certain learning objectives but ends up spending half of her teaching time managing the six students, in a class of 48, who are disinterested and unmanageable. Moreover, she also finds that this behaviour is peculiar only to her class and is not replicated in other teachers' classes. This raises concerns regarding her own pedagogy, learning resources, her authority in maintaining decorum, and the teacher-student relationship. There are two options before Anita; she can adopt the role of a technician or that of a reflective practitioner. Both the options are discussed below.

Teacher as a Technician: Taking into consideration all the knowledge, skills, and strategies she learned during her pre-service teacher education programme, Anita tries to work out the various options for managing the student's disruptive behaviour. It is a serious issue since it will affect her entire classroom interaction and engagement. She can choose between the following options: she can consider informing the school authorities and inform the students and their parents about the consequences if the students do not follow her instructions/directions. If the same behaviour persists, it can affect their assessment. She feels that if she does not punish inappropriate behaviour and is not 'tough' and 'strict' with the students the class will be unmanageable.

The 'Technical Rationality' model of teacher education, based on the premise of Positivism, posits that all the professional problems can be resolved by translating into practice the knowledge emerging from the findings of scientific studies. It is a powerful philosophical doctrine that emerged in the nineteenth century. It is a legacy of Positivism and science and technology that had developed during that period. In this model, knowledge emerging from empirical sources and scientific studies is considered legitimate. Teachers are expected to transmit the content knowledge to students without giving consideration to their context and challenges. It is assumed that when a teacher encounters any problem she can rely on professional knowledge to resolve it, instead of her own voice and judgment. American Sociologist, Schön (1983) critiqued this model, considering it reductionist in nature, arguing that it fails to provide answers to the problems arising in each and every teaching context and reality. The teaching profession is quite dynamic in nature and one cannot pre-determine problems and challenges arising in the field. Moreover, a teacher cannot find solutions to all the challenges in the school system by a single method, or by applying scientific facts and principles. The technical rationality model does not give space to experiences, viewpoints, and philosophies of the teacher. The teacher plays a central role in a school system, as she/he is the primary agent who knows the everyday context and reality of the classroom. We alienate the teacher from the context of the classroom and limit her role only to transacting knowledge, when we equate her role with that of a technician, thereby disempowering her.

Teacher as a Reflective Practitioner: The second possibility that Anita can try in her class is entirely different in nature and transaction. She is still concerned about

the disruptive behaviour of students in the classroom. She debates whether she should discuss the issue with her friend, who has taught in the school for the past six years. She ultimately decides that it would be the most appropriate option. Her friend introduces her to the different aspects of the situation and how to make the best use of their resources. Anita begins to see the problem from a different perspective. She tries to understand the dynamics of the classroom, based on its diversity, reading-related research papers and studies, and develops an in-depth insight on the issue. As her thinking evolves, Anita's insights help her develop an intervention plan for the students.

In the first vignette, the teacher is acting as a technician; she locates the problem of the situation with and in the students. Her remediation plan does not take into account the context of the student. In fact, the tradition of the school system is at the heart of her planning. In the second vignette, the teacher is acting as a reflective practitioner; she does not consider teaching as a pre-determined and pre-sequenced set of instructions, and attempts to locate the problem in the context, grounded in reflective thinking.

Concluding thought on Vignettes: As established through the given situation, we can infer that the act of teaching requires independent thinking, critical introspection, and reflection on part of the teacher as an ongoing process. The essential quality of reflection is thinking about the practice in order to improve it (Hatton and Smith 1995). The process of teaching is very complex as it not only comprises learning objectives, but it also takes into account the children's social backgrounds, their interests and inclinations, along with the holistic development of the children. The teacher's role, consequently, becomes very dynamic and moves beyond that of formal communication and limited interaction, influencing and motivating the children to pursue their interest areas and, in a way, their future. It becomes all the more important that a teacher is given her legitimate space to connect with the children at various levels and, rather than perceiving teaching as a mere act of transmission of content with a predetermined set of objectives and solutions to the problems (acting as a technician). In the wake of the above arguments, it becomes imperative that a teacher does not restrict her role to the completion of the syllabus; in fact, she has to attempt to view teaching as a process, incorporating space for innovation, for grooming of children, and for developing their interests, not merely as a product. The process also becomes important where the strengths and weaknesses of children are taken into consideration and the teacher is not just guided by a predetermined set of learning objectives which are blindly followed. She needs to constantly review and change her ways, in alignment with the needs of the children. Therefore, it becomes all the more important that the teacher is actively reflecting and reaching out to children, extending her role from that of the knowledge giver, transforming into a mentor and a thinking practitioner. When a teacher becomes a reflective practitioner, she is open to the possibilities of constructing new learning environments for the children, learning from her previous experiences, and working on them to construct new experiences, suitable for the cognitive capacities and interest level of the children. It brings to the limelight the origin of reflective thinking, starting from the state of doubt, perplexity, hesitation, or confusion that is

considered the origin of the thought process and, thus, necessitates an act of search or investigation, to resolve that doubt and perplexity.

Theoretical Backdrop of Reflective Practices

If a teacher is teaching in a class, then is she not thinking? Does she not modify her approach in the class as part of her thinking or on the basis of reactions of children? Is thinking on any matter the same as reflecting on the matter? Is thinking required as an integral part of reflective practice? If not, then what else is required? In the following section, we will try to find the answer.

The term 'Reflection' is derived from Latin Word *reflectere* which means 'to bend back'. The basic meaning of reflection is 'something returned in response'. Its general meaning can be understood through two different disciplines: In the discipline of Physics, when we stand in front of a mirror, we can see our image. What is the reason? A mirror bends back light, making the objects visible. In the discipline of education, reflection is also 'bending' back, to our experiences and learning from it. Thus, reflection is closely associated with learning and thinking. We 'reflect in order to learn something and we learn in order to reflect. These are two mutually dependent processes.

Despite the importance of reflective thinking in creating meaningful learning situations, there is still a lack of a clear definition of 'reflection' and there are no explicit criteria to assess the quality of reflective thinking. Moreover, there are problems in implementing reflective activities in teacher education programs (Rodgers 2002). It is the intent of the author to elucidate how reflection has been conceptualized through different theoretical perspectives (John Dewey and Donald Schön) and how a contemplation of reflective practice could be useful and worthwhile for both the naive and seasoned teachers.

John Dewey: Pioneer in Reflective Thinking

Dewey is recognized as the key pioneer in the twentieth century of the concept of reflection. His book *How We Think* ([1910]1933) clearly influenced the later works of both Schön and Kolb (Harrison 2008, p.9). Dewey (1933) has mentioned three meanings of 'thinking': whatever goes through our head; what we do not directly see, hear, smell or taste; taking into consideration beliefs that are based on certain evidence or testimony. In his words "Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends, constitute reflective thought" (Dewey 1933). This indicates that reflection is the conscious inquiry into the nature, conditions, and bearings of the belief (or disbelief). His basic premise of reflection is related with problem-solving and with improved learning as the end result.

The following segment discusses the criteria for reflection highlighted by John Dewey. It describes how a teacher can use that criterion for her own learning.

Dewey states that reflective actions are different from routine actions. He asserts that routine action is directed by factors such as tradition, habits, authority, institutional definitions, and expectations. Reflective action places emphasis on solving a problem, incorporating active, persistent, and careful consideration of any belief or supposed form of knowledge. Unreflective teachers accept the everyday reality of the school as it is and they try to find the possible solution according to the rules, regulations, and norms of the school. It is important to highlight that the unreflective teacher is also thinking but her thinking limits her from perceiving problems in more than one way. If the teacher is acquainted with the distinction between routine and reflective action then she can analyze her teaching, going beyond a technical, competency-based model (Calderhead and Gates 1993). The aim of reflective practice is to shift from routine action to reflective action, where a teacher can engage in constant self-appraisal and development.

Dewey further explains that three attitudes are a prerequisite and integral part of a reflective action: open-mindedness, responsibility, and wholeheartedness.

Open-mindedness: Open-mindedness entails readiness to look at problems in new and different ways, to consider the many facets and alternative possibilities of the problem, critically evaluating one's belief system too. A person who is open-minded is ready to accept that her beliefs are unsuitable, and be willing to change it. As a teacher, it is your call whether to accept the dominant teaching procedures and strategies that form the schools' tradition or explore and re-evaluate your views and beliefs of teaching and learning in the student's context, level and learning style, or in the context of content, pedagogy, and the like. A reflective teacher should always re-evaluate the existing practices in the classroom and remain open to accepting the new insights.

Responsibility: To be reflective a teacher needs to be responsible and committed to face the consequences of her actions. It involves taking responsibility for moral traits, intellectual actions, and decisions. While teaching, a teacher needs to make many voluntary decisions about educational objectives, the content of the text, teaching-learning resources, and so on, in a class. Reflective action requires that the teacher to be responsible for the conscious actions on these matters, which do not have an immediate reaction but influences the attitudes of the children about themselves and the society they are living in.

Wholeheartedness: A teacher is wholeheartedly immersed in the teaching profession.

Open-mindedness and responsibility are the essential and indispensable aspects of a teacher's philosophy and behaviour. For example, 'Inclusive Education' approach is generally propagated by teachers in a classroom. But, on the basis of my interaction with the student-teachers' in the context of their school experience, it emerged that physically differently-abled students are generally treated in isolation from other students. The school environment does not take into consideration a student's strengths, weaknesses, and individual differences. The curriculum, instructional strategies, physical environment, and pedagogy are also not modified

to cater to the needs of all the students. However, a reflective teacher would not hesitate to fight for her beliefs attempting to make the teaching-learning process relevant taking into account the varying needs and abilities of her students, as far as humanly possible.

Further, John Dewey considers reflection to be a special form of Problem Solving which includes the careful ordering of ideas, linking each one with its predecessors. He places emphasis on reflective thought as a chain of thoughts, linked together in a sustained movement to a common end, leading to some conclusion. Each link in the chain predicts the next. Reflective thought generates in a situation of doubt, confusion, or perplexity when a person searches or inquiries into the ways of resolving that situation, rather than prevalent and dominant tradition. Reflective thought can be understood in five phases:

- *Suggestions*: several potential solutions, ideas, and possibilities which come to mind while approaching a difficult situation and leads to the stage of suspension of belief temporarily for considering the solution.
- *Intellectualization*: a state of mind leading to a careful re-examination of the situation, taking into consideration various perspectives. It leads to a definition of a problem and the raising of questions about the nature of the problem and possible solutions.
- *The Guiding Idea/Hypothesis*: the ideas or suggestions then gets reframed, with respect to the ‘true problem’, defined and modified, and shaped into a definite supposition or a hypothesis.
- *Reasoning*: the process of considering any idea or supposition as a part and not the whole of the inference, requiring other ideas to state any conclusion. Dewey (1933) states that, “Reasoning has the same effect upon a suggested solution that most intimate and extensive observation has upon the original trouble” (112).
- *Testing the hypothesis by Action*: to test the conjectural ideas by experimental corroboration or verification. Verification can result in success or failure of the idea.

In Dewey’s view, reflection ‘enables us to direct our actions with foresight ... It enables us to know what we are about when we act’ (1933, 17). Thus, he opines that it is important to develop the habit of reflective thinking.

Hatton and Smith (1995) discerned four key issues from Dewey’s work, related to reflection. The first issue is concerned with the linkage of reflective thought and action. They raised a few relevant questions: Is reflection limited to the thought process about action or it is connected in action? The second issue is related to the time frame: Is reflection about simultaneously reflecting and doing, or thinking about the alternatives of the action for an extended period of time. The third issue deals with the relation of reflection and problem solving: is the quintessence of reflection about finding a solution to the problems? The last issue deals with the conscious effort to incorporate historic, cultural, and political values or beliefs in framing and reframing the problems.

Pollard and Triggs (2002) argued that Dewey's notion of reflective action, when developed and applied to teaching, is both challenging and exciting. They build upon Berlak and Berlak's (1981) theory, and proposed the working of an inquiry based reflective thinking model where the encounter and appreciation of the dilemma serve as the foreground, demonstrating that the reflective process is manifested in a cyclical or spiralling manner.

Construction of Reflective Practice: Schön's Perspective

Schön (1987) foregrounded the significance of reflection in the learning process. Reflection has a potential to bring about changes at two levels:

- **Macro-dynamics:** resulting in societal change due to action and reflection.
- **Micro-dynamics:** leading to the change of the 'classroom' dynamics.

This change is necessary as there are many prevalent traditional educational practices operating in the schools, such as the computational model of learning, where learners passively receive information from the environment and assimilate into their existing framework of understanding (Scott 2008). Unidirectional flow of information, beliefs, and knowledge are the characteristic of this model. It begins in society, having certain norms, values, beliefs, power (culture, economics, politics) and ethos, influencing the organizations which have been given the responsibility to frame the curriculum. Then, the curriculum is passed on to school organizations for its implementation, instructing teachers what to teach and how to teach. The teacher simply transmits the content of the curriculum to the students. When these students become adults, they have already imbibed the ideology, knowledge, and the behaviour, that society demands from its members. The action-reflection cycle in a learning process, consists of introspection, questioning, and analysis at every step, without being imposed in a hierarchical setup, like in computational model of learning, and thus, making the whole process bi-directional.

Reflection is triggered when a teacher experiences surprise, puzzlement, or confusion in a situation (as John Dewey propounded). The teacher frames and reframes the problematic situation through the lens of past experiences, trying to identify new possibilities for action. In Schön's words:

The practitioner allows himself to experience surprise, puzzlement, or confusion in a situation which he finds uncertain or unique. This surprise can trigger reflection-in-action. He reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation. (Schön 1983).

He wanted to closely examine what practitioners—architects, psychotherapists, engineers, planners, managers—actually do in practice (Schön 1983), investigating the epistemology of practice, considering realities faced by professional practitioners in their everyday work situations where they reflect on their own actions.

This is a distinguishing feature of professional practice. Schön emphasizes unique situations that constantly engage professionals, using their knowledge and past experience as a 'frame' for action naming it 'professional artistry'.

Schön (1987) argued that the existing dominant model of professional knowledge, Technical Rationality, is unable to handle unique, unstable, and uncertain aspects of professional knowledge and problems are solved through the rigorous application of science; that is, by using adequate existing theories but there are messy and swampy situations where the research-based theory doesn't provide any solution. Therefore, reflection, considered as an important tool in such a situation, facilitates acquisition of professional knowledge.

Reflection-in-Action and Reflection-on-Action: Conceptions Central to Schön's Work

Reflection-in-Action: It refers to thinking about the action while doing it, which can result in the change during the teaching-learning process. Thus, reflection can take place throughout the teaching-learning process. It is an individual initiative and action since the practitioner is simultaneously reflecting and performing. Schön emphasized that whosoever get engaged in this process becomes a researcher in the context of practice.

Knowing-in-Action: Schön argues that professionals continuously make decisions and judgments, but it is not necessary that they assert the theory behind it. Thus, he calls such knowledge 'Practical Knowledge' which leads to **Knowing-in-Action**. It makes him/her the skilful performer, as he/she has tacit, intuitive, and spontaneous knowledge. He also stressed that the most experienced professionals unconsciously use their knowing-in-action most of the time, and include reflection-in-action during this process.

Reflection-on-Action: It refers to what happens after the action has taken place. Teachers 'bend' back and think of 'the action', its strengths and weaknesses, effectiveness of teaching, the approach used, difficulties faced, how they may be overcome and their future implications; thus, consciously reviewing, describing, analyzing and evaluating their past practice with the objective of gaining improvement in the future. It also takes into account reflection post-facto, providing scope of collaborative teaching and learning. The practitioner can share her difficulties with colleagues pondering over the problem, in order to find a solution.

Finally, we expect change, new learning, perspective building, and developing insights about the problematic situation. Both the types of reflection, have space for revision, modification, and refinement of the expertise of a practitioner.

Francis (1995) and Ward and McCotter (2004) have identified common elements in reflection after considering Dewey and Schon's work of reflection. They highlighted three key ideas related to direct experience, careful consideration of beliefs,

values, or existing knowledge and suspension of immediate action. They later emphasized that reflection is situated in practice, is cyclic in nature, and incorporates multiple perspectives.

Section 2

Research Questions

In the following section, the research questions explored in the research study undertaken will be described:

- What is the perception of teacher educators on reflective practices?
- How do teacher educators perceive pre-service teachers' understanding of reflective practices and its associated challenges?
- What are the suggestions of teacher educators for the improvement of reflective practices?

Data CollectionIn order to find answers to these questions, the author conducted semi-structured interviews with twenty teacher educators; individually meeting each teacher educator for 1 h each. The teacher educators agreed to the use of an audio recorder during the interview and each audio recording was transcribed later. The format of the semi-structured interview incorporates space for organizing detailed conversation regarding the teacher educators' perception of reflective practice, permitting the author to seek elaboration on it. These interviews were conducted according to the availability and convenience of the teacher educators. As the nature of the interview was quite flexible, teacher educators, at times, deviated from the topic, discussing other issues. In such cases, they were asked specific questions that could throw light on the area of research. These interview were conducted to gain an insight into the perception and experience of teacher educators on reflective practices and on the reflections written by pre-service teachers.

The respondents were teaching B.El.Ed. (Bachelors of Elementary Education) Programme of University of Delhi, India. B.El.Ed. programme started in India in 1994. It is a four-year professional degree programme to prepare teachers for teaching at elementary school level.

A teacher educator plays an important role in guiding pre-service teachers from theory to the real life experiences of the school. In this context, the teacher educator not only provides her expertise and shares her experiences but also gives mental strength and motivation to pre-service teachers. This is the prime responsibility of the teacher educator. The school internship programme is an overwhelming experience for pre-service teachers, becoming quite reactive, being emotionally triggered by many factors in the school. Factors such as student-teacher interaction, school infrastructure, social background of the children, issues of bullying or punishment, can be very emotionally overwhelming for the young pre-service teacher. In the midst of conflicting emotions, they have to execute their plans, set up a resource room, write reflections, and also complete two projects. The role of teacher educator is very critical in facilitating their development as thinking practitioner by providing feasible suggestions and feedback.

Findings The following section is organized into three themes, derived from the semi-structured interview of teacher educators, regarding the conception and functionality of the reflective practices. The three themes are:

Theme 1: Perception of the teacher educators of the concept ‘reflection’.

Theme 2: Understanding of the pre-service teachers about reflective practices and its associated challenges.

Theme 3: Scope of Improvement.

Theme 1: Perception of the teacher educators on the concept ‘reflection’: The literature related to this concept states, that the terms ‘reflection’ or ‘reflective practice’ have numerous definitions and explanations, thus making it a problematic concept. Hatton and Smith (1995) opined that the terms lack sharp definition and cover a wide range of approaches and strategies. Nevertheless, definitions are important in understanding how the teacher educators have perceived reflections or reflective practices. Most of them stressed that reflection is a re-thinking activity about one’s own actions and experiences, a concentrated and focused thinking, actively engaging with oneself and with others over specific events/episodes/experiences and to think about what transpired during the teaching-learning process (see Fig. 9.1) This finding is in consonance with the literature on reflection (Dewey 1933; Sparks-Langer and Colton 1991). Very few teacher educators have moved away from ‘thinking’ and related reflection, towards the ‘analysis’ perspective; that is, critically analyzing their own teaching experiences. Dewey (1933) also considered reflection as a special form of problem-solving: the ability to look back at the situation critically in the form of any doubt, confusion, or perplexity and search or inquire for different ways of resolving the situation. However, the teacher educators stressed that reflections can be improved upon considerably by evaluating and modifying one’s own behaviour, approach, and attitude towards the teaching-learning process. Schön (1983) asserted that teachers went backwards in

Teacher Educators’ Perception on Reflection	
Few excerpts	
➤	‘Reflection is a process of a rethink about one’s own action and past experiences’.
➤	‘Reflection is about how people are rethinking about their knowledge, beliefs and everyday activity’.
➤	‘Reflection is to think over specific events/episodes/experiences’.
➤	‘Reflection is concentrated and Focused thinking’.
➤	‘Reflection is about active engagement with oneself’.
➤	‘Reflection is thinking and raising questions on the incident happened or happening’.
Source: Interview from Teacher Educators’.	

Fig. 9.1 Teacher educators’ perception on reflection

their thinking process, considering ‘the action’ they had encountered with the purpose of improvement in the future. In Dewey’s view, reflection” enables us to direct our actions with foresight ... It enables us to know what we are about when we act” (1933, 17).

A few teacher educators have related reflection with planning and execution of the lesson plan. They stressed that planning, execution, and reflection are three sides of dynamic reflection, where reflection helps pre-service teachers to revisit and analyze their planning and execution of the lesson plan and give feedback to themselves for the improvement of their planning and execution. It provides the possibilities to look for gaps between theory and praxis, improvement and innovation in their planning and execution. Here, questioning and reasoning play a significant role in the particular incident or experiences, where pre-service teachers’ are able to give the answer of ‘why’ and ‘how’ of the situation.

All the teacher educators emphasized that good reflection should not be limited to the description of an event only. It should incorporate description, personalized experiences: how one thinks, responds, perceives and experiences the situation, analysis of those experiences, covering a range of issues, while being theoretically supportive. Issues taken up by pre-service teachers should not be limited to the classroom level, but should reach the macro and micro level of the education system. Further, they stressed that reflection should have involve a critical analysis of the whole context, highlighting the pros and cons of teaching experiences and of children’s responses.

A few teacher educators also stressed that reflection should include the identification and causes of the problem, giving reasons for the course of one’s action with open-mindedness. Dewey (1933) foregrounded that open-mindedness is one of the key attitudes in an individual for encouraging reflection incorporating self-reflection, and a clear understanding of its need and purpose. Pre-service teachers need to challenge established practices and norms of the system. A ‘good’ reflection should be able to give answers to both ‘what’ and ‘why’; the reasons behind the events/situations.

Hatton and Smith (1995) recognized four levels in the development of reflection from teaching practice: **descriptive writing, descriptive reflection, dialogic reflection, and critical reflection.**

All the teacher educators emphasized that descriptive writing means describing the whole episode of what has happened in a school. It is a kind of reporting in detail of an event. Further, a few teacher educators emphasized that it helps in improving the observation of pre-service teachers’.

A majority of the teacher educators clearly understood the meaning of descriptive reflection. They asserted that pre-service teachers start raising questions based on their experiences, looking for reasons for a problem. They do not analyze, hence, they do not arrive at any insight or a new conclusion. If a pre-service teacher is doing an analysis, then it is only done mechanically with no linkages with theory or past experiences.

A few teacher educators asserted that dialogic reflection is a two-way process where one is having a dialogue with oneself for probing into one’s own inner

thoughts. Hence, it comprises of internal conversation between two 'I's. One 'I' as a present teacher who is struggling and facing challenges, the other 'I' started with negotiating/ solving challenges with the discussion.

Some of the teacher educators stressed that critical reflection refers to critically analyzing the situation, encompassing both positive and negative of the teaching practice, where a pre-service teacher does an in-depth analysis, effectively connecting theory to its practice. Only two teacher educators referred to it as questioning the obvious and existent norms, speaking/empathizing with powerless, and having a transformative vision as a teacher; teacher questions and challenges conflict, inequality, poverty, state policies. It included the socio-political influences on the actions that lead to the emancipation and empowerment with the purpose of restructuring classroom practices and society.

Role of reflection: Teaching is a practical and complex cognitive activity because of its constantly changing pedagogical decisions occurring throughout the day in an ever-changing environment (Calderhead 1989). All the teacher educators have strongly argued that reflection helps in improving pre-service teachers' teaching-learning process in the school by developing their in-depth understanding of various aspects of the classroom, their pedagogy, and their relationship with students. Reflection helps in developing their confidence and their growth as a teacher, by identifying their mistakes and developing a vision that leads them to see beyond the classroom locating specific issues that emerge from various perspectives. It also helps in developing a new perspective in pre-service teachers'. Calderhead and Gates (1993) emphasized that professional development of a teacher might have been inconceivable without systematic and deliberate reflection on practice. Engaging in reflection, teachers can develop new perspectives, new ways of looking at their own actions, and a new awareness of their own behaviours (Osterman 1990, as cited in Cimer et al. 2013). A few teacher educators also emphasized that reflection helps pre-service teachers' in developing a sense of responsibility making them understand right and wrong. Osterman 1990, Bengtsson 1995 and Convery 1998 (as cited in Cimer et al. 2013) emphasized that reflective teaching proves to be a valuable tool for the teachers to develop a greater level of self-awareness about their actions and behaviours while teaching. It also helps teachers maintain the role of a learner where they keep learning about the teaching-learning process. Kolb (1984) proposed that, when teachers act as learners, they construct their own educational perspectives, reflecting on their own experience, gaining new insights from experience, while developing new strategies that can be used in subsequent teaching.

Theme 2: Understanding of pre-service teachers of reflective practices and its associated challenges

Pre-service teachers' understanding of the term 'reflection': All the teacher educators stressed that pre-service teachers' have not understood the meaning of reflection, remaining confused between the terms reflection and description. It is evident in the excerpts presented below (Fig. 9.2).

Most of the time, they limited it to the successful or the unsuccessful delivery of lesson plan. Cruickshank (1987) highlighted that pre-service teachers merely

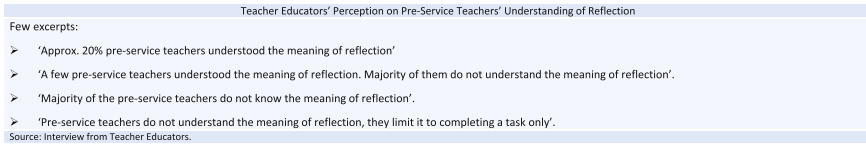


Fig. 9.2 Teacher educators' perception on pre-service teachers' understanding of reflection

reflected on the success of specific instructional objectives in the classroom in order to achieve pre-determined objectives.

Difficulties faced by pre-service teachers in reflective practices: The author derived **certain themes** from the teacher educators' notions on the difficulties faced by pre-service teachers'.

Language related problem: The teacher educators posited that pre-service teachers have language expression problems. They were not able to express themselves properly,; their inadequate vocabulary and writing expression resulted in the poor articulation of their thoughts in the reflective journal.

Identifying issues: Pre-Service teachers were not able to locate an issue out of their experiences in the system. If they were able to identify the problem, they could only state it descriptively without any solution.

Confusion between description and reflection: Pre-service teachers often remain confused between description and reflection. They usually treated the two terms as synonymous.

Teacher educator's views on reflection: A few teacher educators highlighted that all teacher educators have their own notion and conceptual understanding of reflection that sometimes confused pre-service teachers' regarding the nature of reflection.

Factors enhancing pre-service teachers' ability to reflect

All the teacher educators strongly emphasized the importance of the four main factors—feedback, writing expressions, reading skills, and discussions—that play a significant role in enhancing pre-service teachers' ability to reflect. Guidance and continuous feedback given by the supervisor could bring a positive change in them. They felt that guidance is an integral component for reflection. It should be provided through an interactive process, both by the supervisor and the peers. Feedback provided by the supervisor will help them to analyze, locate their strengths and weaknesses, and hence, lead them to grow as a teacher. Schön (1987) emphasized the importance of senior practitioners in the process of learning by coaching and guiding students to choose their own way, instead of teaching them what they need to know. Spadling and Wilson (2002) brought into the foreground personalized feedback on reflective practices, and the relationship with the instructors, as the most important factors in the growth of the pre-service teachers. They stressed improving the pre-service teachers' writing expression and reading skills (using novels, magazine, newspapers) in general, and to have focus-group discussions where they share and discuss with their peers and school teachers. Literature has highlighted other ways in which to have a reflective dialogue:

supervisory conferences (Ward and McCotter 2004; Zeichner and Liston 1996); peer discussions on videotaped teaching episodes and critical thinking dyads (Hatton and Smith 1995); seminar instructions (Zeichner and Liston 1996); and class discussions (Kaminski 2003). The teacher educators also emphasized that an attempt should be made to develop sensitivity in pre-service teachers' towards children, teaching, school, and the society, at large. Bartlett (1990) highlighted that reflection was not only included in responsibility to self but also to the society as a whole emphasizing that reflection has a dual meaning: the relationship between individual's thought and action, and the relationship between the individual and his/her membership to the larger society. The pre-service teachers should develop a strong theoretical understanding, connecting theory with practice while becoming critical observers of the complexity of the system. Moreover, by allowing them to do peer observations, to improve their teaching and thinking skills and developing the ability to locate the problem and approach it from various perspectives, would also enhance their theoretical understanding further.

Theme 3: Scope of Improvement

The following section has described some ways suggested by teacher educators for the improvement of reflective practices which are thematically arranged below.

Orientation programme: All the teacher educators expressed that they usually planned an orientation programme for creating an understanding of the reflective practices for B.El.Ed. students every year. The Programme varied from 1 to 2 h of duration taking place before the internship program commenced. The teacher educators emphasized that orientation played a vital role for the pre-service teachers' understanding of reflective practices in terms of its objectives, process, and role of reflection in becoming a good reflective practitioner. Although orientation focusing on reflection is a necessary step, one-time orientation is not sufficient to understand the process of reflection. Varied suggestions were given by the teacher educators, such as organizing practical sessions in the workshop mode, showing some samples of 'good' reflective journals, or intensive discussions and assignments, reflective in nature, as part of the theoretical curriculum.

The responsibility of the teacher educator: Teacher educators have visualized various roles for themselves. Teacher educators who are planning to give orientation on reflection should have a strong theoretical understanding of reflection. They must assess the reflective journals well in time, giving in-depth feedback (maybe, in the form of questions that helps in stimulating the thought process).

Functional change in reflective practices: Teacher educators stressed that change in curriculum is required as no period in the timetable is assigned for reflection in the current practice. A time-slot for group discussions related to reflections with a teacher educator, should be incorporated in the pre-service teachers weekly schedule. Many teacher educators were of the view that a course on reflective practices can be introduced as part of the B. El. Ed programme.

Pre-service teachers' participation: Pre-Service teachers should participate in various seminars, lectures, discussions, and orientation sessions. There is a need to inculcate the habit of reading by introducing the theoretical understanding of reflection and other resources too. Pre-service teachers should get exposure to

academic writing enhancing the four language skills: reading, writing, listening and speaking. They should be encouraged to pose as many questions as possible by developing their outlook to see the situation from different perspectives. Hypothetical contextual examples can be given for practice in writing a reflective journal. One of the teacher educators stressed that *the need to proceed from simple to complex telling them to think and reflect on small event/issue/situation from their daily life, then moving towards the complex system of school and education.*

Learning from each other: According to teacher educators, it can be a significant strategy for improving reflective thinking in students. Regular discussions with peer group and supervisor should be encouraged. One of the teacher educators also asserted that *we could call practising teachers or alumni for interactive sessions in order to broaden their horizon.* Many teacher educators stressed the importance of developing the habit of reading in students by making them read good journals, autobiographies, and so on. Another suggested that *a single book could be read from various perspectives; thus, a book club can also be started for this purpose in the college.*

Discussion and Conclusion

Reflection can be interpreted through different theoretical perspectives. John Dewey considers reflection to be a special form of thinking for solving a problem based on certain evidence or testimony. From Dewey's perspective, one can see that reflective action is different from routine action, and requires teachers to develop certain attitudes such as open-mindedness, responsibility and wholeheartedness. Further, according to him, reflection is not a uni-linear model but is a cyclic process. Donald Schön's stance considers reflection to be a way of knowing. The findings indicate that pre-service teachers have a general understanding of reflective practices according to teacher educators. A majority of the teacher educators emphasized that reflection is related to the thinking process where one is re-thinking one's own actions and experiences, whereas only two teacher educators visualized it as examining one's own assumptions, beliefs, and knowledge, and contextualizing it further in the socio-political domain. However, they strongly argue that reflective practices are important for a pre-service teacher's evolution as a reflective practitioner. Thus, the author recommends that it is important to develop their theoretical understanding by making them familiar with the work of John Dewey (1933), Donald Schön (1987), Van Manen (1977), Valli (1997), Pollard and Triggs (2002), and the like.

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Chapter 10

Changing Times: Need for Pedagogical Reforms to Foster Life Skills



Neema Chaurasiya

Introduction

Human beings have an intrinsic need to make sense of their own existence as well as the physical world around them. Multiple attempts have been made through different theoretical explanations, to explore and explain the functioning of human cognition and the complex processes of meaning-making as practiced by our species. Empiricists and Rationalists have been locked in eternal debate over the supremacy of reason or experience to explain reality as we understand it, while Kant went ahead to combine the two by stating there is a relationship between a priori concepts, such as space and time, in the human mind and the experiences that an individual encounters, which combine to construct sense of existence and physical world (Gardner 1999). Thus, apart from the universal conceptions in the brain which are inherent to humans, experiences too play a key role in our understanding of ourselves and our world.

Education is one of the repositories of experiential content through which humans preserve their knowledge for posterity, including culture and language whose main medium of transmission is also education. Education itself is one of the crucial experiences through which an individual constructs his or her understanding of the world. Education thus acts in twin capacities, that of a repository of experiential knowledge, and an experience in itself through which knowledge is constructed. Hence, with historical continuity and the advancements in human experience, educational content remains ever evolving; as civilization evolves, so does educational exchange and content.

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What Necessitates Change in Education?

Our civilization underwent extraordinary changes with the advent of modernity and the rise of industrialization, urbanization, and capitalism. It not only transformed the very foundations of our social and economic structures, but also affected the process of meaning-making that an individual goes through. This will be elaborated upon further.

French Sociologist Emile Durkheim (1984) studied the modern society, and its patterns that resulted from large-scale industrialization, and economic changes such as division of labour and rise of specialized occupations. He pointed out that the basis of social cohesion shifted with time from 'mechanical solidarity' towards 'organic solidarity'; a key feature in the passage from a pre-modern to a modern society. Pre-modern societies were based on mechanical solidarity: shared sentiments and values which bound them together, a kind of collective conscience. Modern societies were held together by mutual dependency and contractual relations, as people were engaged in specialized work and needed each other's services. The differentiation or stratification of society was based on specialized occupations, which is the basis of modernity according to Durkheim; the denser the stratification, the more modern the society.

The rise of modernity thus had social and economic ramifications, and its effects varied from the very apparent external changes in the social fabric and the economic structures, to the not-so-apparent ones on the collective social psyche and the psyche of the individual. On one hand, the large scale production of goods due to industrialization made day to day life easier; means for mass dissemination of information and ideas emerged, so did the new social classes based on the new means of production. But, on the other hand, it also resulted in increased complexities for individuals, hence necessitating a shift in the way humans made meaning of the world around them. Human life became simpler as far as its daily tasks were concerned, but, at the same time it became much more difficult for the individual to cope with the rapidly altered socio-economic changes, especially at the psychological and emotional level. As the dense stratification of the society with its need-based dependence meant a loss of common values and sentiments, and thus a common axis of meaning, a common code of understanding was gone; it created alienation and isolation for the individual. One may even equate this with the idea of 'anomie' which Durkheim elaborated upon in his 1897 work *Suicide*; it means a state of normlessness, a lack of normal social and ethical standards, where the system has broken down, and individuals are not clear about the behaviour expected from them. This lack of clarity on social roles leads to feelings of estrangement from others and ensuing loneliness which causes depression, aimlessness and desolation.

Subsequently, technological advancements also brought along new instruments of transformation, such as modern means of transportation, which made long-distance travel easier. However, cultural exchange, which increased due to the ease of travel, further led to cultural domination and culture shock for migrants who

travelled to far off places in search of opportunities. Industrial and technological growth also brought forth instruments of mass destruction; the after-effects of colonialism and World Wars were transformative on the collective human psyche. The world as we knew it changed in an irrevocable manner, especially after the two World Wars. The feeling of loss of the familiar and known, reflected across mediums such as art and literature. Lawrence (1928) refers to the post-World War age as the tragic age, in his contemporary literary work, an age where “The cataclysm has happened, we are among the ruins, we start to build up new little habitats, to have new little hopes. It is rather hard work: there is now no smooth road into the future” (Lawrence 1928, 1). He points towards the break that has occurred in historical continuity through the last line. Similarly, Gaskell (1855) reflects the effects of Industrial Revolution on social life through her work *North and South*, and Virginia Woolf (1925) echoes the devastating and disorienting aftermath of the war on the lives of individuals and the society as a whole, in her famous novel *Mrs. Dalloway*. Literature allegorically described the unutterable feeling of losing the axis on which meaning was based, experienced collectively by the society because no such collective loss had occurred before. The established structures thus suffered a massive jolt.

The feelings of transformation, which the western world underwent through, that is, the changes in means of production and thereby in the social structures of family, kinship, and community, and the disorientation in the minds of people as a consequence of destructive effects of the new technological advancements, both rolled forth into the rest of the world through the two great wars and the process of colonization. This wasn't however a sudden transference; it took time and happened in a non-linear fashion. The process of modernization not only came in late to the colonized countries as compared to the west, but it was also not an innate phenomenon here but a borrowed one. It also deserves mention that the economic structures of the developing nations weren't as strong and stable as the developed ones; these therefore could not as readily support the changes which were to be brought about in the system for aligning it with the changing needs of the society.

Consequently, a new transformed world order, with its altered socio-economic structures, presented a pressing need for a corresponding shift in the skill-set of the individuals dealing with these structures. Education, for this purpose, had to lend what was required to return to meaning-production again. However, the demands placed upon the education system were not exactly identical throughout the world; they had their context-specific peculiarities.

The larger world now deals with post-modernism and the technological revolution, also known as the second industrial revolution. But, since modernity washed ashore late in developing nations such as India, the education system in these nations is still grappling with the requisite changes for coming to terms with the transformed socio-economic structures. Knowledge and information is available freely through digital forms and yet some of our educational institutions still lack the basic infrastructure to reap the benefits of technology. Unequal division of resources is a problem which cannot be dealt with technology alone till there are qualified humans to solve it. It becomes all the more important in the postmodern

world to deal with the imbalance, as technological resources need skilled manpower to handle them.

Since the Industrial Revolution came late to developing nations and eastern societies such as ours, we are still under the resultant influences. And, due to the sociological, political, and economic differences there is no surety that the consequences will be the same as that in the West. Therefore, we cannot blindly copy the western model. It has to be adapted, keeping in mind the local contexts and requirements, especially the socio-economic differences and unequal distribution of resources. In the specific context of India, this is further compounded due to the myriad differences of culture, religion, caste, and language. Geographical inaccessibility of certain areas, deeply-set gender discrimination, widespread illiteracy, colonial remnants in the educational system and policies, and the dearth of budget allotted to education hardly helps the cause. In such a context, a much more nuanced and ingrained native system is required to cope with the specific problems of the educational set up if it is to cater to the demands of the changing times.

Need for Life Skills in the Contemporary Scenario

As stated earlier, one of the crucial purposes of education is to help the individual to analyze and understand their world and negotiate with it, by providing ever evolving experiential content. “Education must enable a man to become more efficient, to achieve with increasing facility the legitimate goals of his life.” (King 1947, 2). Thus, in its ideal role, Education acts as an experience that assists in developing skills which help one understand their world and face the challenges and struggles of daily existence.

We have reached a stage now where skill development is not for employment alone but for the purpose of negotiating life. As one of the crucial functions of education is providing the child with tools for successful living, to cope with the rise of new jobs with the altered means of production, as well as to psychologically and emotionally adapt to the emergent order, education for skill development became indispensable.

United Nations Children’s Fund (UNICEF) defines these key skills for survival in society as ‘Life Skills’: the “abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life” (UNICEF 2013, para. 3). These are the skills necessary for successful living and management of personal affairs. They are acquired via teaching or direct experience and are used to handle problems and questions commonly encountered in daily life. Since education for imparting these skills became vital, many national and international agencies came forward with plans for the same.

UNICEF, apart from stressing on the indispensable aspect of life skills, loosely categorized life skills into three categories: cognitive, personal, and interpersonal

skills. It also clarifies that life skills are a synthesis and many skills are used simultaneously in practice. For instance, decision-making often involves critical thinking and value clarification.

Partners in life skills Education, a product of a United Nations Inter-Agency Meeting held at WHO headquarters in Geneva on 6–7 April 1998, defined life skills, and the necessity of teaching them to young learners inside as well as outside the school. It laid down five basic areas of life skills that are relevant across cultures: decision-making and problem-solving; creative thinking and critical thinking; communication and interpersonal skills; self-awareness and empathy; and coping with emotions and stress. The document also throws light upon the reasons why life skills are taught in different countries like Zimbabwe, Thailand, United Kingdom, United States, South Africa, and Columbia, and so on. Pointing towards the gap between education and lived reality, it says that “many countries are now considering the development of life skills education in response to the need to reform traditional education systems, which appear to be out of step with the realities of modern social and economic life.” (WHO 1999, 2)

Closer to home, the CBSE identifies life skills education as a lifelong process. It states that the development of the inner self is the main concern which, when integrated with the concern to survive in one’s environment, guides one towards the necessity to possess the skills required for the same. As individual strives to enhance happiness, beauty and quality of life, life skills education equips the individual to attain these at every stage of life. It therefore suggests that life skills education should be implemented in the formative years of schooling.

Establishing the necessity to impart life skills education isn’t enough for its implementation. Concrete steps are required in order to incorporate life skills development in the existing system of education or to reform it for accommodating the same.

To foster such reforms, and to suggest new approaches to skill development which depart from the conventional practices of education, appropriate design, test, and allied innovation is required. The field study, described in detail in the later part of this chapter is one such attempt to analyze the alternative pedagogic strategies used in language classrooms in schools that nurture life skills in our learners. As life skills development requires emphasis as a key area of focus for designing curriculum and pedagogy, more such efforts are required.

Types of Approaches to Life Skills Education

Historically, education has dealt with the changes and alterations in the socio-economic fabric either by adding on to its own content or modifying it. Education for a new skill set therefore requires adding or making amendments to the present curriculum. The Interventionist approach suggests an addition in the content, through which an attempt to meet the objective is made; an Integrative approach on the other hand, incorporates the objectives to be met within the

existing framework by modifying it. UNICEF's differentiation in this regard is between 'life skills education' and 'life skills based education'. The former is defined by them as a structured programme, over and above the school curriculum taught that is implemented to increase positive and adaptive behaviour by assisting individuals to develop and practise psycho-social skills; the latter, 'life skills based education' is an approach that is used to teach subject matter, whereby participatory teaching-learning methods are used to help learners develop not only knowledge, but also psychosocial life skills. This is an inclusive model which can be merged with the prescribed curriculum that is followed in schools. Both of these will be clarified further with examples. The lack of research on the comparative results achieved by following these two models makes it difficult to ascertain which would be better; however, the contextual requirements for successful implementation of both are very different.

The regional overview by UNICEF in *Life Skills Based Education in South-Asia* (2005) highlights the necessities peculiar to the area and the specific problems that come in the way of a more holistic endeavour towards implementation of life skills based education in South Asian nations. It states "In South Asia, life skills programming is either general in nature, helping learners to make better choices, or specific, targeting risk behaviours and situations." (UNICEF 2005, 5) This dichotomy leads to a fragmented programme of implementation. They further stress on the variety of programmes that are going on in South Asian schools; in some schools life skills are taught as a stand-alone curriculum, in others as a component of an existing curriculum, while in some schools, they are seen as an extracurricular activity, and some even have a blend of these. These cover a range of health and non-health issues and are taught in various grades, usually with more complex and sensitive issues being reserved for the higher grades. But most of these in-school life skills programmes do not question the societal structures underlying the vulnerabilities and risks they seek to reduce, and have difficulties linking the development of knowledge, attitudes, and life skills to the practice of positive or protective behaviours. The learners who lie outside the school system are denied the benefits of even the limited help that such in-school programmes offer.

Present Programmes and Their Shortcomings

In the specific case of India, diverse models of life skills education programmes are run in parallel. Out of these diverse models, most are based on the Interventionist approach, such as the programmes developed by NGOs for informal educational, or those conducted as short term modules in collaboration with the UNICEF. These have been going on in various parts of the country, but they do not cater to the larger masses. Not only are the beneficiaries limited to a few people who attend such courses, but there is hardly any follow up or even feedback mechanism on how sustainable their results and effects are. If one turns towards the formal school system, the YUVA School Life Skills programme designed for school-going

adolescents by the government similarly worked under the Interventionist model and the programme itself ran into debates over its content. SSA (Sarva Shiksha Abhiyan) also lists development of life skills in its agenda, and, in the same way, CBSE has developed CCE manuals for teachers teaching classes 6th, 7th, and 8th, which elaborates upon life skills education and their assessment. In addition to these, private educational institutions such as Pearson Schools, CMR group of institutions, and so on, have life skills education as part of their curriculum under the Interventionist approach, as does NIMHANS (National Institute of Mental Health and Neurosciences) with its mental health programmes and adolescent education programmes.

With so many programmes and efforts in place, why are society's and the individual's requirements of skills to negotiate with each other and the capabilities to fulfil their goals still unfulfilled? One of the many problems in the way of a better execution of life skills programmes is the lack of a uniform policy for the development of life skills education in our country. With so vast a geographical outreach and such multifarious differences as listed before, there cannot be a single way of implementing life skills education in India, but a policy underlining the need for it can be, and is, required. The National Curriculum Framework (NCERT 2005a) stresses upon a constructive approach to learning, whereby we inculcate an inquiry-based approach, impart work related knowledge, and develop broader life skills in the learners, but the implementation and the 'how to' is missing. Also, as mentioned earlier, the diverse programmes do not cover the majority of our population, since the Interventionist approach is the most common type of programme structure, which itself is a problem. Apart from lack of follow-up, this approach also makes a huge demand on the resources, equally in the informal educational system and the formal school set up, in terms of infrastructure, time, and trained personnel. In a developing country such as ours, where even basic primary education is not available to a considerable majority of the population, demarcating time and resources out of the overexploited school system for implementing this model on a large scale is next to impossible. This is one of the chief reasons for poor results of the existing life skill programmes, most of which are running on the interventionist model. To add to these, there are watered-down versions being run in the name of life skills programmes as well, such as vocational training courses or the weekly slot in the school time tables reserved for 'value education' or 'moral education' period. Most of these programmes are not even assessed, which leads to inattentive efforts or, worse still, no efforts at all on part of the teachers as well as the students. If the programmes are assessed, they are treated as an additional burden over and above the prescribed subjects in the curriculum. Besides, they are taught in an exam centric manner: just enough of rote learning to clear the examinations, whereby the whole purpose of the programme, or at least a considerable part of it, stands defeated.

The Interventionist model thus comes at extra cost, effort, time, and resources, which aren't available for all, not even to the majority in a vast country like ours, with the second largest population in the world. It also promotes poor results as, in the formal school system, the focus is on curriculum completion. Referring to this problem, Vice-President Hamid Ansari said, "Far too often the focus, regrettably, is

on completing the syllabus rather than on cultivating critical thinking skills and competencies. This needs to be corrected”.¹ With syllabus completion and examination being the topmost priority of the system, one can hardly blame the teachers if an extra non-evaluative module is not taken seriously in practice. They are to be provided with a sense of relevance, and the necessary training required for execution of a life skills programme, if any such programme is to yield results. Which brings us to yet another obstacle in the way of an effective life skills programme: the lack of proper training for teachers. The teacher training programmes do not include any module for imparting the knowledge of teaching life skills to the learners. The teachers themselves have had little or no life skills training during their own educational experience, because of lack of such programmes in schools. Refresher courses for teachers based on life skills education module aren't widely available, and are not compulsory. Also, these are mostly based on the Interventionist model as mentioned earlier; therefore, even after being trained under these, the teachers are unable to implement the same when faced with the lack of space, time, and material resources in the formal school set up.

How an Inclusive Model or Integrative Approach Can Help

The lack of training to impart life skills therefore has to be addressed at the pre-service training programme itself, by addition of an inclusive model of life skills development training: the Integrative approach. The prospective teachers should also be provided with the rationalization of including life skill education in the curriculum and its relevance for the life of the individual and the society as a whole, if they are to apply their training in the classrooms later. Teacher training, thus, becomes all the more important in this model of life skills education; it will become clearer once we elaborate how the Integrative approach works.

This approach of imparting life skills incorporates life skills development into the existing subject curriculum of the school, it “teaches specific skills and abilities through subjects, such as science, civics, physical education” (Singh and Menon 2015, 14). Hence, it merges the knowledge of the subjects with practical application in life and acquiring skills such as problem-solving, communication and critical thinking in the process. This is not only helpful for the individual in gaining practical experience and acquiring life skills, but also helps to bridge the chasm between theoretical knowledge and lived experience, which is one of the major challenges that our education system is faced with today.

The Integrative approach thus helps achieve the goals of life skills education, as well as education as a whole, in a better manner; however, at the same time, it also

¹‘Rebuild skills of teachers, depoliticize education: Vice-President,’ India Education Review, 5 March 2012. <http://www.indiaeducationreview.com/news/rebuild-skills-teachers-depoliticize-education-vice-president>.

requires a very keen understanding, effort, and continuing innovation on part of the teacher. Thus, the earlier stress on pre-service teacher education is more relevant to this approach, than the Interventionist model where experts and training personnel can be counted upon to deliver the modules in comparatively shorter period of time. The Integrative approach is also more in harmony with the aims of life skills development, especially in a developing country such as ours. Provided that the right kind of training is given to the teachers imparting the same, it can be assimilated with the existing school curriculum, making no extra demands on the time or material resources of the school and can blend in well with the formal system of education.

Life skills education by means of the Integrative approach can be combined with any and all of the school subjects taught under the present school curriculum in India, along with providing teachers with a scope for flexibility or modification, according to contextual requirement. But, the practical application of this approach does not only require a robust pre-service teacher training programme, it also requires pedagogic innovation which can be achieved only through relevant research.

Inclusive Model of Skill Development in Language Teaching

The research study described in detail later, was undertaken with an aim to analyze the development of life skills in middle school learners through literature teaching strategies, in English language classrooms. The language learning model followed in schools nowadays is the communicative one, under which the learning of languages follows through interaction with literary works and practical application of language, as opposed to rote memorization of grammar rules and imitation of standardized pronunciation. Many educational institutions, however, still practice the earlier approach of translation, and memorization of grammar rules. In this approach, literature teaching strategies are limited to 'question and answer' and 'fill up the blanks'. The reason why the 'transmission' mode has still continued is that it is easier to pass information than to impart 'skill'. But with the recent developments in the field of language education, the scenario is changing fast. According to Sood (1988), language teaching and literature teaching are not two separate or separable activities so the communicative model is emerging as the preferred mode of teaching language through literature. This model partially fulfils the purpose of life skills enhancement on its own by developing life skills of communication and articulation, its various strategies can also very readily be utilized for the development of other life skills as well.

Language as a subject offers a very wide space for the development of life skills in the learners, and literature provides the best means possible for training critical sensibility and scholarly analysis, as well as for nurturing moral and aesthetic

values (Sood 1988). Literary texts are ‘open’ representations of what it means to be human and thus the literature classroom is a very dynamic arena, one where the personality and belief system of a learner is shaped, and where all sorts of groups across the political spectrum argue for their view of truth and proper conduct (Purves and Pradl 2002).

Rosenblatt (1995), explains that literature helps the individual connect with others by making them sympathise and empathise. It acts as a vehicle for transmission of culture, social realities, and emotional attitudes towards interpersonal relationships, thus helping in the development of social skills, such as tolerance and sympathy. It opens up vast possibilities of looking at life and philosophies to negotiate one’s own. Literary experience may also influence the reader’s capacities for reflection and introspection, and help him or her deal with problems efficiently.

Literature-based language classrooms allow students to deal not only with the text but also their own personality, and a healthy personality is a balance of inner freedom, personal autonomy, as well as the ability to resolve personal conflicts. Bruno Bettelheim emphasizes that “School must provide a protective environment in which the child faces his conflicts squarely, learns to resolve them without the destruction of his psychological freedom, and develops skill in selecting behaviour which is to his own best interest as well as that of society” (Bettelheim 1969, 69). Apart from stressing on the societal aspect of skill acquisition and development, he maintains that individuality or personal skills are as important as social skill, if not more. Moreover, there is a continual clash between the two; therefore, education must not encourage unreal expectations of harmony in the child by oversimplifying the complexities. Schooling should, therefore, focus on the strengthening of coping skills in the individuals, so that they not only manage but also value, their own self, and society they are a part of.

The communicative model of language learning has resulted in a revolution and led to drastic changes in the methodology of teaching language in schools. Several new and creative alternatives have emerged, especially for experiencing literary texts. Literature, in any case, is difficult to approach through explanations; there is a need to provide space for the learners to develop their own understanding and meanings out of it. Such alternative approaches of teaching also pave the way for linking the classroom teaching of language with the stated aims of incorporating skill development into the school syllabus.

Design of the Field Research

A field research was undertaken to analyze, in detail, these alternative strategies for teaching English literature and the effects of these strategies on the enhancement of life skills in middle school learners (Chaurasiya 2014). This research study also helped find out how far the attempts to integrate theoretical knowledge, imparted through education, with its practiced form in learners’ life are successful in the classroom scenario. The research was aimed at understanding the contribution of

alternative strategies of teaching literature on the life skills of the learners, which in turn will help in better implementation of present strategies, and further development of new ones.

The design of the study consisted of three tools developed for the purpose of the study, which were validated by experts of the field and revised as per their suggestions. The sample group for the study was comprised of Class 8 students of one private and one government school in Delhi with an average class size of 35 students, along with their respective subject teachers. A week-long pilot study was also conducted to test the efficacy and appropriateness of all the three tools, and they were refined accordingly before their implementation. An observation schedule was developed for the purpose of a non-participatory observation of students of Class 8, to study in detail the alternative strategies used for teaching language through literature. Separate observation schedules were developed for the genres of prose, poetry, and drama. The skills to be observed were chosen on the basis of the psychological life skills enlisted in the *CBSE CCE Manual 2010 for teachers of classes 6th to 8th* and the linguistic life skills were extracted from the *Position Paper on Teaching of English* (NCERT 2005b). The order of the psychological life skills enlisted in the CBSE CCE Manual was changed by the researcher as, for the purpose of study, they were to be categorized into personal, social, and literary skills. These skills were: Managing feelings and emotions; Dealing with stress; Self-Awareness; Critical thinking; Creative thinking; Problem Solving; Decision Making; Interpersonal Relationships; Effective Communication; Empathy; Creative Writing; Public Speaking; Listening Skills; and Reading Skills. Each skill out of the 14 skills thus selected was further divided into 3 sub-items developed by the researcher. The observations were recorded in this schedule during the allotted field work days: two days per week in both the schools, for a period of four weeks. To cater to the multiple teaching strategies being used in the same class period, each teaching strategy was noted and observed separately, and a rating scale was employed to record the number of learners showing positive behavioural changes. The rating scale was developed with the help of '*Developing checklist and Rating Scales*' by British Columbia Institute of Technology (BCIT 2010). Detailed diary entries of the class observations were also maintained to fill in any gaps left in the observations, and the written class tasks of the learners were observed as well, to substantiate the data.

The second tool was learners' questionnaire, which was developed to examine whether the alternative strategies helped in the enhancement of life skills of the learners. It was divided into the genres of prose, poetry, and drama, and had the same 14 life skills and 3 sub-items for each life skill, corresponding to the observation schedule. The questionnaire for each genre was provided to the learners after the observation of classes for that respective genre was complete. A set of general instructions were provided to the learners at the beginning of the questionnaire to avoid confusions and to clarify doubts, as well as to assure confidentiality of the responses. The language of the tool was chosen keeping in mind the linguistic level

of learners of Class 8. The answers to each item were recorded as 'Yes', 'No' and 'Sometimes'. The third research tool was a semi-structured interview developed for the English language teachers of the classes being observed. It consisted of 15 items, based on the same life skills chosen for observation schedule, and learners' questionnaire, and an additional question for them to share any other information they considered relevant to the topic. It helped in the triangulation of data as well as overcoming the limitations of observation over a short period of time. The interview was audio recorded after necessary permissions were obtained, and transcribed for the purpose of analysis.

Analysis of the Study

Analysis of the data collected for the purpose of the study indicated that the alternative strategies of teaching language through literature in school classroom helps to enhance the life skills of the learners to a considerable extent, and thus enriches the life of the learners in the process.

In all, 29 strategies were observed, across all the three genres, with the help of the observation schedule. The detailed analysis of these, along with the questionnaire and semi-structured teacher interviews, revealed that some of the teaching strategies observed helped in bringing out certain life skills more than others. The detailed study therefore can also be used to target any certain skill whose enhancement is desired, and hence help in targeted instruction as well.

In poetry teaching, strategies such as 'Quiz based on the poem' and 'Discussing the metaphoric meaning of words and phrases' were very successful in bringing out the life skills of the learners, while in prose teaching the strategies of 'Creative paragraph writing' and 'Discussion based on the chapter' were successful in bringing out learners' skills; Drama teaching strategies such as 'Enactment of scenes by the learners in groups' developed the maximum number of skills in the learners, including both personal and interpersonal skills.

The skills of 'Managing feelings and emotions', 'Interpersonal relationships', 'Listening skills' and 'Empathy' were developed the most in the learners, as was seen in the overview of the analysis of all the three tools of data collection. While 'Self-Awareness', 'Problem Solving' and 'Decision making' were the skills that were least affected through the alternative strategies to teach language through literature. In the semi structured interview, the teachers pointed out some of the reasons due to which some skills did not develop in the learners. The lack of practice for instance, prevents the skills of 'Public speaking' and 'Reading skills' from developing properly; or poor language skills hamper the growth of 'Creative writing skills' in the learners. During the interview, one of the subject teachers also stressed the importance of the relationship between the teacher and the learners in determining the success of a strategy in bringing out life skills and the learners' response towards it.

The study, thus, provided a clearer understanding of the impact of literature teaching strategies in a language classroom on the life skills of the learners. The analysis of the data collected for the purpose of the study, through the means of the three tools—the Observation schedule, Learners' Questionnaire and Semi-structured interview—revealed that the alternative strategies of teaching English literature used in schools did help in the enhancement of life skills. This proves that working within the specified framework of the school curriculum, the theoretical knowledge of school subject content can be integrated with practical aspects, which helps in the betterment of the learners' life skills under the Integrative approach of life skill development.

Limitations and Further Research Suggestions

There were of course a few limitations of the study: it was limited to the detailed analysis of literature teaching strategies only in one government and one private school in Delhi; the observations were done over a short period of time, so only a limited number of skills and strategies were analyzed and no assessment of the prior levels of life skills of the learners was done. Further research can be undertaken to analyze the effects of the strategies used to teach any other school subject on the life skills of the learners. A comparative study of the difference in the proficiency of life skills of the learners taught by alternative strategies, and the proficiency of life skills of the learners taught by traditional methods can be also be done. One such study is presented by Kacker and Chhadva (2013) in their article called *The Effectiveness of Life skill Education on Adolescents*, which underlines the need and effectiveness of life skill education on learners, especially in adolescents. It is based on a study conducted over a sample of control group and experimental group learners in school, where one had the benefit of being exposed to life skill education while the other did not receive any life skill training. By the end of the study both the groups were evaluated through a battery of tests which showed that the learners of the experimental group, or the group that was exposed to life skill education, had better readiness to adapt to the required adjustments in everyday life scenarios, as they were provided training and practice to deal with the challenges. The learners of the control group, or the ones who were not provided with life skill education, did manage to cater to the tests, but their overall responses or measures to deal with the given tasks were not as effective as those of the learners provided with life skill education. The article thus establishes the necessity and benefits of life skill education in the overall development and mental preparedness of learners to deal with everyday life scenarios.

Conclusion

The importance of acquisition of life skills cannot be overemphasized, be it in the form of 'life skills education', a programme over and above the school curriculum, or 'life skills based education', an inclusive model that blends the teaching of life skills with the syllabus and classroom transactions in schools through the Integrative approach. However, the problems faced in adding on to the school curriculum can be minimized with the inclusive model, as demonstrated through the arguments and the field research study above. This model of life skills development also offers flexibility, in terms of modification according to the context of the learners, since it doesn't provide a rigid structure and allows for the teacher to incorporate life skills training into the existing curriculum, moulding it in accordance with the specific requirements of the learners. It also has scope for the inculcation of values through pedagogic endeavours which are essential to govern the skills that the learners acquire.

The need of the hour is a customized approach that unites the general school curriculum and its classroom transactions with the simultaneous acquisition and development of life skills, which is rooted in the everyday life of the learners; a new approach to skill development that departs from the conventional practices. This can be a comprehensive programme of life skills based education that imparts life skills and enables the learners to develop into individuals ready to face the challenges and struggles of contemporary life. CBSE identifies life skills education as a lifelong process; its seeds, however, are to be planted in the formative years of schooling, and innovation in pedagogy is one of the key tools that require focus to initiate this growth.

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Chapter 11

Redesigning the School Classroom: A Case Study of Mirambika



Nitika Bose and Deepika Bansal

Its open structure is welcoming, invites children as well as the elements of nature. There is space aplenty to run and play, cozy corners to play hide and seek, all open to the dust, wind, rain, leaves, where the chirping of the birds makes a perfect harmony with the incessant laughter of children.

(Quote on a bulletin board in the Mirambika library).

Introduction

The quality of learning space is significant in shaping students' views about the subjects that they study and the education system as a whole (Zedan 2010). Learning space refers to environmental conditions that students inhabit, create, or dwell in, during the learning process. Zhang and Barrett (2010) point out that the design of the physical space within the school plays an important role in the execution of the teaching-learning process and, therefore, much attention needs to be given to the design of school spaces. It has also been pointed that "appearance of the school is important in terms of the negative or positive messages students receive about themselves. Students internalize any reflections on the buildings and schools on themselves as they and their teachers identify with their school, its image, and reputation" (Department of Education and Early Childhood Development, 2011).

In an era of globalization, there is a concomitant demand on education and schooling to create a workforce that can suitably fit into the dictates of the market forces as active producers and consumers. Children are often trained to comply with strict rules of obedience, structuring their bodies and minds, as if they were empty vessels eagerly awaiting knowledge and information that will empower them and enable them to become key players in the global economy. Curriculum and

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knowledge, within academic environments today, is divided into rigid academic disciplines with emphasis on skills that cater to the demands of the global market. Based on this, the school space is designed to structure the bodies of children into the rigidity of a disciplined workforce.

School spaces, though often thought of as inconsequential, play an important role in the holistic development of students. Students spend much of their day in schools which almost never feel warm and homelike. The school's physical and social environment affects morale and student's learning. The school's physical and social space plays a pivotal role in facilitating human interaction and enables instructional techniques. Research has shown that spaces where students feel warm and happy, are conducive to learning and overall development of students. Environments that are nurturing and, at the same time, foster autonomy are likely to positively influence teaching-learning. Well-decorated classrooms with adequate light and ventilation enable students to concentrate better on assignments. Moreover, adequate spaces that facilitate movement, and open spaces to look at, infuse a sense of freedom, and ability to think independently among children. Also, student-centred schools must create interactive spaces within and outside classrooms, where meaningful experiences and relationships are allowed to foster among peers and with the school staff. The most memorable classes for students are usually the ones that allow them to break away from the structured routines and work in teams to collaborate on projects and group tasks. A sense of excitement is evident on the faces of children if they are allowed to suddenly break away from the rigid discipline in class and are left free to learn in the midst of nature or simply allowed to draw, write a poem, or perform a role-play through actively collaborating with others, or silently creating things on their own in open spaces. Boring, monotonous, and cramped classroom and school environments inhibit the learning process. Lack of breathing space, teacher-facing arrangements within classrooms, and inadequate space for movement, curbs independent thinking and creativity. Therefore, drawing attention to the dynamics of school spaces is crucial for creating conducive learning environments and providing experiences that can be treasured by students in order to change their perceptions of learning and going to school as mundane, cumbersome, and tedious.

Physical and social characteristics of learning environments affect learners emotionally and cognitively. Positive learning environments not only help students learn better but may also create an emotional attachment to the spaces that they inhabit. This space may become a place where students love to learn, a place which they seek out when they want to learn, or a place which they fondly remember while reflecting upon their school experiences, related to where they learned their best lessons. However, the sense of a place within a school and its impact on students' learning has not been researched on a large scale. It has usually been a peripheral issue under a larger theme or area in the educational context. The aim of the current paper, therefore, is to draw the attention of educational practitioners to the importance of school spaces, and their influence on students' experiences and teaching-learning. The aim is not just to draw attention towards the physical spaces that make up the school but also to explore its social dimensions where meaningful interactions unfold on a day-to-day basis. The study also explores the interplay between historically

assigned meanings to school spaces, and meaning and experiences constructed by students and teachers in their daily interactions. We conducted the study in Mirambika, a school which is based in Delhi, established in 1981. The ethos of the school draws from the educational ideas of Sri Aurobindo and The Mother who emphasize evoking the potential of the individual in its entirety. According to The Mother (1956), education, in order to be complete, must consist of, and develop five elements of the human being; physical, vital, mental, psychic, and spiritual. Mirambika is 'Free Progress School' which is based on the understanding that education is a process of awakening that unfolds the whole person. Free Progress education leads to the unhampered development of psychic being. It sets students free of structures that bind and stifle their cognitive and self development leading students towards self discovery and self actualization. (Brochure-Mirambika).

Perspectives on 'Sense of Place'

Scholars recognize that place "fundamentally structures human experience. It is deeply human to make places and to think in terms of places" (Smith et al. 1998, 6). Brey (1998, 240) suggests that place can be understood as "an area or space that is a habitual site of human activity and/or is conceived of in this way by communities or individuals." So, 'place' within a school may mean the whole school, a particular classroom, or a corner of the school serving as a regular hide-out. 'Space' becomes 'place' when it is invested with meaning by those who spend time in it (Geertz 1973, cited in Helfenbein). Tim Creswell points out that "place is not just a thing in the world but a way of understanding the world. We see attachments and connections between people and place. We see worlds of meaning and experience" (Creswell 2004, 11).

Political geographer John Agnew (1987) has outlined three fundamental aspects of place as a 'meaningful location'.

- Location.
- Locale.
- Sense of place.

Spaces, according to him, should be viewed holistically in terms of their location, locale, and sense of place. Location refers to "where" of a place. The school is stationed on so and so road; city or country refers to location in its simplest form. Locale refers to the material setting for social relations: the way a place looks. It refers to the concrete form of a place or the actual setting within which people conduct their lives as individuals living in a society. Schools have classrooms, doors, library, windows, staircases, and the like. A place in this realm means material things. By "sense of place" Agnew means the subjective and emotional attachment people have to 'place'. Sense of place refers to the feelings and emotions a place evokes. However, these aspects are not mutually exclusive and interact

with each other to create human experience. Meanings can be very personal depending on experiences. But meanings are also shared and, in some important ways, also social. Spaces are practiced. Children do things in places. What they do, in part, is responsible for the meanings that a place has. Places are continuously enacted as children go about their everyday lives in schools. Experience is at the heart of what sense of place means to an individual and groups.

Humanistic geographer Edward Relph has tried to understand the importance of a place to ordinary human life. He was interested in understanding the depth and complexity of a place as it is experienced by people. In his book *Place and Placelessness* (1976) Relph questions the taken-for-granted nature of place and its relevance as an inescapable dimension of human life and experience. 'Place' as conceptualized by Relph is not a void or an isometric plane or a kind of container that holds places. Instead, he contends that, to study the relationship of space to a more experientially-based understanding of place, space too must be explored in terms of how people experience it (Relph 1976). Relph concludes that, although places are taken for granted, they are heterogeneous and infused with the many lived realities and experiences of the people who inhabit them. He further stresses that places derive meanings from the ways in which people experience them. He argues that when a person feels safe, secure, and at ease in a certain place, his or her identity or sense of belonging to that place will be stronger. This experience is what Relph calls *Insideness*. On the other hand, a person can be separate or alienated from a place; this experience is what Relph calls *Outsideness*. Based on this distinction, different places provide different identities to individuals, and human experience takes on different qualities of feeling, meaning, and action. For instance, the sense of place within the school may infuse the subjective experience of safety, freedom from threat, wonder, belongingness, and comfort, thereby making students feel at home or experience insideness within learning spaces. On the other hand, children may experience a culture of fear, detachment, formality, and homesickness, while inhabiting school space, which makes them feel a sense of outsideness to the related place.

Place, therefore, is not just a location in physical space but a site of human activity and conception and its "placeness" is subjective, dynamic, and constantly evolving through human interactions. Thus, the school or the classrooms are not just an assembly of walls and furniture but can be understood through the experiences and interactions of people who inhabit them.

Tuan's landmark book *Space and Place: The Perspective of Experience* (1977) also explains how place means more than a location. Places, he says, have history and meanings. For him, places must be understood from the perspectives of people who give it meaning. The sense of a place involves the experiences and aspirations of people. The perspectives of people who assign meanings to places form the central core of his theorization. For Tuan, the individual is at the centre of a given space providing meaning to it through his or her methods or intentions. Therefore, spaces for him are experiential, perceived, and felt. Spaces, therefore, are sense-bound and can be understood through the day-to-day living of individuals within them. Place is a source of security, meaning, belonging and identity, and these are typically facilitated by meaningful relationships made possible by bonds to place

(Tuan 1977). “As Crang (1998) elaborates, the lived connection binds people and places together. It enables people to define themselves and to share experiences with others and form themselves into communities” (Crang 1998, p. 103).

Through this paper, therefore, we aimed to understand not only the physical spaces within the school but also interaction of teachers and students with it and the ways in which they influence each other. We were drawn to the concept of place to understand students’ experience holistically in a context-sensitive manner. Our interest in this paper is to address how the concept of place shapes positive identities for students. The experience of inhabiting school spaces and the meanings teachers and students attach to them, and the way these meanings are negotiated and enacted, forms the central objective of the present research.

Perspectives on ‘Sense of Place’ and School

The importance of *place* has been “rediscovered” in a wide range of disciplines. Questions like how places are at work, how it becomes a part of something ongoing and dynamic, have been asked and answered. Such studies focus on place as a central component of the questions instead of assuming its specific nature or role in a particular phenomenon (Ellis 2005).

With respect to children, scholars have studied the kind of place attachments they form. Chawla (1992) analyses place attachments to childhood settings of home and natural landscapes. Referring to individual experiences in places during childhood, she describes how children’s psychological development is dependent upon experiences in places where they learned to role-play, explore, create, control, and relate to their physical and social worlds. In her landmark work on childhood place attachments, she writes, “At every age, there is also a need for undefined space where young people can formulate their own worlds: for free space where pre-schoolers can manipulate the environment and play “let’s pretend” in preparation for middle childhood demands; for hideouts and play houses in-doors and out where school-age children can practice independence; and for public hangouts and private refuges where adolescents can test new social relationships and ideas” (Chawla 1992, 69).

Benson (2009) echoes the aforementioned assertions by Chawla. In her thesis, she convincingly argues that children feel passionately about special places like hideouts, forts, and thus, experience place attachment. A healthy place attachment is one in which they form meaningful relationships and enjoy a sense of security. Such healthy place attachments “allow children to experience an inward pull of familiarity and security with an outward attraction to their expanding world.” (Benson 2009, 84).

Scholars in education have only recently begun to understand the relationship children have with their school spaces. Research in disciplines like cultural geography has provided educational researchers the conceptual and analytical tools to

explicate how children's interactions and experiences in spaces influence not only their learning but also their identity formation.

Ellis (2005) argues that *place* in a school which is understood as a source of security, belonging, and meaningful relationships by children contributes to their forming positive identities in classrooms. She examines how place is at work in students' on-going reconstructions of their identities. She labels her own planning for teaching as planning for place-making, thus understanding place as a source of structural formations that can both constrain and enable everyday lives of students in school. These structures can be resources, routines, and course activities that form an inevitable part of the classroom experience. If students find the class a *good place*, it will be a source of security and meaningful relationships for them and will contribute to positive status for all. In her other work, she explicitly states her aim to encourage more educational researchers, to clarify the relationship between places of children's everyday lives and the quality of their lives (Ellis 2004).

The connections of place characteristics to students' experiences of schooling have also been explained using the themes of 'spaces of learning and identity' (Agbenyega 2008). This study argues that a school's space, and the activities of teachers within it, plays a significant role in identity construction of students. Children's environments are shown to have an effect on their cognitive, emotional, and behavioural development. Place is understood to incorporate the practice traditions of school spaces. Consequently, it is suggested that traditional power relationships—the domination, and control that teachers exercised through their pedagogical techniques—carve negative identities for students.

School spaces have also been investigated with respect to specific kinds of learning. Tupper et al. (2008) have explored the ways in which high school students negotiate school spaces beyond the classroom, within a broader context of citizenship education and identity construction. These researchers have found that physical and social construction of space, students' congregation in certain spaces, the visual landscape of a school, and other practices of school, like surveillance, influence the negotiation of identities and citizenship among students. They point out that, "It was clear through our conversations with students that their perceptions of the spaces in the school were intimately connected to placeness, how these places were negotiated and occupied. Our research also illuminates the dynamic and changing nature of place as students learn what teachers teach (the required curriculum) while simultaneously enacting identities and citizenship through their participation in the informal curricula of school spaces" (Tupper, Carson, Johnson, & Mangat, 2008, 1088).

Relationships between classroom environment and children's academic performances have been investigated too. A study by Martin (2004) supports the understanding that material or physical space of the classroom impacts behaviour and cognitive development of children. Other elements of the physical environment, such as lighting, colour, noise, and density, can affect both teacher and student behaviour, like attendance and concentration. She establishes the need for having school settings that are fluid, dynamic, and adaptable to changes in curriculum, teaching styles, and groups of children.

The Setting

We chose Mirambika for undertaking this study because physical space holds immense relevance in Sri Aurobindo's philosophy. Mirambika, a free progressive school located in Delhi, was conceived in 1981 to spread and utilise the educational ideals of Aurobindo and The Mother (1956). The school aims at removing some of the drawbacks that the present education system in India has, wherein children are prepared for a lucrative career in the current economy which is subject to arbitrary fluctuations in the international market. As a result of this, children are meaninglessly burdened and deprived of their creative potential. Sri Aurobindo and The Mother's philosophy, on the other hand, contested such treatment of children as objects wherein they are controlled in a hierarchical system through grading and ranks. They envisaged a school in which there are no structured practices and students are given freedom to pursue activities in accordance to their choice and liking. This fosters an alternative work culture where children develop a sense of time and rhythm in conjunction and balance with nature and their inner self.

The way school space in Mirambika is designed and understood by school inhabitants largely draws from the philosophy of Sri Aurobindo. The school attempts to practice the educational views of Sri Aurobindo and The Mother, and seeks alternatives in curricular content as well as pedagogy. Sri Aurobindo has placed emphasis on the all-round development of the personality, which included education of the senses, body, and mind, as well as moral and spiritual education. Sri Aurobindo's philosophy of education is based on the principle of evoking the potential of the individual in its entirety, which should be developed according to human nature. The library, hall, meditation room, talk room, gymnasium, dining hall in the school, further exemplified an ethos conducive to the holistic development of the learner.

The school is situated around open green spaces surrounded by Eucalyptus trees, a Neem grove, and the 'sunlit path' wherein students can be seen participating in different group activities throughout the school day. These spaces facilitate free exploration, self-directed learning, and flexibility in organization and distribution of resources. Students engage in regular walks, exhibitions, and games which are arranged all throughout the school which fostered healthy interactions with and sensitivity towards nature and fellow students. Consequently, Mirambika was considered an ideal setting for the present research as the physical organization of the school infused cultural meanings wherein students experienced a sense of calm, freedom, desire to explore, and independence to follow their heart within the school. Students stated that the way the school was designed made them feel at home and the architecture of the school according to them was beautiful, natural, and real.

"Jungle gym is our favourite place." (Green Group)

"I love my class. It's fun." (A boy from Gratitude Group)

"I like to reflect when I'm drawing. That's why Lotus Peak is my favourite part of the school." (A girl from Progress Group)

The aim of the present study was thus to question the taken-for-granted nature of school space, and its significance as an inescapable dimension of school life and experience. Mirambika has a different approach towards learning and our aim was to find out and describe how school situations, events, meanings, and experiences are negotiated in everyday life, but remain unnoticed beneath the level of conscious awareness. In contrast to the philosophy based on which Mirambika is organized, the present day education system in India is purely information-based, wherein teaching-learning is structured according to time and space, which neither relates to the needs and abilities of the learners nor takes into consideration the way children learn successfully.

Doing Fieldwork

The type of observation used for the present study was a non-participant naturalistic observation. Naturalistic observation is observation carried out in real-world settings; it is an attempt to observe things 'as they are', without any intervention or manipulation of the situation itself by the researcher.

For the present study, the researchers maintained a diary of events or behaviours observed during the fieldwork. The observers in the present study remained non-participants seeking to be as unobtrusive as possible so as not to influence the situation being observed in any way. We observed the school activities from the time children came to school in the morning. After observing the activities in common for all the groups, we spent the day with different groups (grades): Red, Blue, Yellow, Orange, Progress. We sat in the classroom with the teachers in one corner (as inconspicuously as possible) without participating in the daily activities of the classroom. But this, we believed, could have influenced the way students and teachers behaved within the school. Therefore, in order to reduce the observer influence, we informally interacted with teachers and students after classes so that total acceptance within the school would enable us to carry out observations wherein students and teachers could express their views honestly. While observing, we took detailed notes. While sitting in the classroom or in the any of the other spaces we attempted to capture the rhythm of the group by describing all the activities as finely as possible. We decided to explore the different areas of the school by moving around instead of staying inside any particular classroom. We observed different activities that were happening in different parts of the school throughout the day, and also observed various places such as the skills corner, crafts room, junior park, and jungle gym. We carried out informal interactions about students' perception of place in their school. We also conducted interviews with teachers about their perceptions on sense of place within the school and its influence on learners' identity.

Analysis

The following examples illustrate the daily experience of children within the school.

Example 1 During our observations, we found that Orange group students walked around the classroom freely and approached their teachers in case they had any doubts. They easily sought each other's support if they got stuck with the assigned task. Students working on individual assignments spontaneously formed groups to discuss their ideas and work collaboratively. The teacher's presence inside the classroom did not hinder collaborative learning. Instead, she moved around the class to help the students in their endeavours. On being asked later how she organized her classes, the teacher responded: "We teach not to discipline the students but to enable them to learn with each other." Their relationship was based on dialogue and persuasion, rather than commanding obedience and strict adherence to rules.

On another occasion, while observing the Orange group, we saw that the children dispersed to different parts of the room when asked to make a Math game. They collected white sheets, pencils, drawing scales, and other required articles from the classroom cupboard and sat wherever they felt like, both inside and outside the classroom. One of the girls sat on the ledge adjacent to the window. On being asked about her choice of place within the classroom, she said "I like sitting here when I'm doing my work." The children did not seem hassled at all about the assignment that they had been given. An expression of ease was present on their cheerful faces while pondering over what Math-game they wanted to draw. There was no distinction between work and play. The joyful act of making a game was harmoniously blended with the cognitive task of performing mental calculations. As one of the students remarked, "Classroom is my favourite place. Look what I just made."

There was no deadline for them to finish their work. They were developing their own ideas and interacting with each other to make their games. With plenty of time at their disposal, each of them finished the work at their own pace. 'Didi' asked them to go around and play the games that their friends had made. She herself played with them. Everybody was having a nice time playing games and helping each other. Hierarchy at work was not evident. Teachers and students had equal status. They openly discussed and negotiated the teaching-learning process. Instead of addressing their teachers as 'madam' or ma'am, the students addressed them as 'did is', symbolizing a relationship of equality, trust, and friendship.

Example 2 The classroom had two separate seating arrangements. One part of the room had low benches arranged in a circular formation where students sat for prayers and discussions. Desks and chairs were arranged in a semi-circle where students sat at the beginning of the lesson. The teacher narrated a brief story trying to get the attention of the students. After this, the students were instructed to start working on their projects. Some students quickly moved to the 'skills corner' to work on their projects. Some of them decided to sit inside the classroom in groups to discuss the project on 'history of money'. For the teachers, project-based learning

meant, “breaking conventional disciplinary boundaries between subjects and facilitating theme based learning.”

A few groups of students moved outside the classroom placing their charts and pencil boxes on an elevated platform adjacent to their classroom facing the lobby. This allowed them to be in an open space in the midst of trees, birds, and the natural environment, deeply involved in their own thoughts. One girl sat on the verandah next to the classroom, under the sun with her note-pad, looking engrossed while working on the task assigned. Most of the students, especially those who had finished their own task, moved in and out of the classroom and talked to their classmates and extended help to them if required. After all of them had finished, the ‘bhaiya’ asked them to display their projects on the board together. The teacher/bhaiya did not comment on individual performance but appreciated the collective effort made by the entire class. Explaining this, the teacher said, “Our aim is not to prepare competitive individuals but to enable them to work cooperatively.” Drawing from Aurobindo’s philosophy the teachers also believed that their project-based pedagogy is geared towards, “all-round development of personality: the vital, mental, physical, psychic, and spiritual.”

Example 3 Different places in the school were connected to each other and there were no divisions between them. There was a sense of continuity between different places, and this fostered a sense of relatedness among the people inhabiting it. The trees and plants were interspersed with the marble building of the school. Children were learning very actively by constant interactions with their environment. They could directly look at various plants and animals to draw and paint them. We observed children venturing out into the open green spaces of the school to gather broken branches and fallen leaves for their projects. One of the teachers said: “The students learn a great deal about the aspects of plant-life, such as when a particular tree bears fruits and under which tree branches can be found in plenty. This is a kind of learning which a textbook-centred setting fails to provide.”

The rabbits and ducks which were present in the school had a special place in the hearts of children. They felt a sense of responsibility and love for those animals. One child told us that, “We all have given names to the rabbit”; another added, “Me and my friends like to go and sit next to them, talk to them, play with them and give them food.” Evidently, their learning was happening in close proximity with nature. There was a sense of continuity between the outer and inner worlds of the children, as one of the teachers remarked: “beautiful outer surroundings lead to beautiful inner thoughts.” Neatly organized classrooms and the larger school space were a testimony to this statement of hers. Also, teacher and student areas were not demarcated, and all shared the same space. For instance, the basketball court was used by both teachers and students to play.

Example 4 The space of the school is such that it lends itself to various pedagogical activities. One of the teachers related an instance where, while learning about shapes, children themselves discovered that the school architecture was designed essentially with triangles and squares/rectangles. They observed this pattern of particular shapes in small locations and later generalized it to the whole school

building by putting all of the small observations together. The teacher also narrated another incident where children looked at the labels (SE101, NE 101 etc.) consisting of letters and numbers at the top of the classroom entrance and figured out on their own that they had been labelled according to the direction in which the room was facing. This exercise facilitated the learning of directions by students. In another incident, we observed students from different groups working together on a project. They were collecting data on different material aspects of school such as the number of tables and chairs, cupboards, lights and fans, bulletin boards, and dustbins. The aim of the project was to graphically show the number of each item per student in the school. One of the Math teachers informed us: “such activities not only improve mathematical skills of students but impart in them a sense of responsibility. It informs them of the adequacy and the condition of the objects they use on a regular basis.” Later, the students made suggestions on how best to utilize the available space and resources within the school. It implies that, within Mirambika, school space was not an unchanging given, in which students had to carry out their activities, but they were active agents in acting on the space and would participate in improving it for future use.

Discussion

While exploring the relationship between school space and learner’s identity, at Mirambika we saw a unique relationship. The conscious use of school space to inculcate freedom and independence in its inhabitants, supports and supplements pedagogic practices in a rich way. School space can play a pivotal role in fostering values of sharing, love, selflessness, contentment, and independence with respect for mutual interdependence. It can provide ample opportunities for growth and development of both teachers and students.

In this paper, we have taken up the question of how the organization of school space contributes to on-going reconstructions of students’ identities in classrooms. In order to do so, we used Relph’s (1976) conceptualization of ‘place’ to understand how spaces structure human life and experience. His theorization helped us understand place as the source of structural formations influencing the daily lives of those who inhabit that space. Such structures can be in the form of available relationships, resources, regulations, norms, and routines. Everyday life that is negotiated with these also becomes a structure itself.

Further, Tuan’s (1977) conceptualization of place was used to understand how individuals not only inhabit physical space but act as agents, providing meaning to the spaces within which they dwell. The nature of connections that are facilitated by the organization of space in unique ways, influences the sense of belonging, security, meaning, and identity of individuals. Tuan’s understanding, therefore, highlights how spaces are lived through connections that dwell within it.

In the present study, drawing from Relph (1976) and Tuan (1977), we tried to explore the ways in which school space acts upon, and is acted upon, by the lived

connections between teachers and students. This reciprocal relationship between school space and lived connections strongly determines the identity formation of students. Material objects and the lived realities of those who work with these objects, unite to provide experiences that can make or mar the development of students. Therefore, in the present study exploring the specific context of Mirambika we have provided references and examples to show how the organization of school-space creates positive learner identities. Through our interaction with students and teachers at Mirambika, we found that school space had been consciously designed to facilitate learning and development of students in positive ways. A child-friendly environment has been deliberately created at Mirambika to foster the growth of children in a non-threatening, supportive, and secure manner.

Although in the present study we have not explored how the organization of space in traditional schools influences student's identity, references have been drawn in the form of the review of related literature and from our own schooling experiences to enable comparisons between traditional and alternative schools. As we have conducted a case study of a single school, we do not intend to make generalizations; but one of the aims of the study was to get insights into how school spaces can be organized differently, keeping in mind the developmental needs of learners and the ways in which learner's identity gets impacted by them.

Working with these interpretive frameworks and ideas, we also discovered that instructional activities are also integral elements of structure of school as a place. As discussed by authors like Ellis (2005), interactions in school between students and teachers have the potential to contribute to the development of a positive identity and relationships among students and a sense of community. Therefore, we also tried to focus on the significance that classroom interactions have on constituting school as a place where students continuously create and recreate their identities.

The study finds that in Mirambika the organization of space facilitated many activities for self-expression and creativity. There were many opportunities for students to develop a harmonious relationship within their school community, thus, contributing to a positive sense of self. Similar to Chawla's (1992) study, we found that attachment to school-space impacted the psychological development of learners. A sense of relatedness was evident among students in Mirambika, wherein absence of demarcation or boundaries between various school spaces fostered that feeling of oneness. One of the teachers shared that the same was manifest in students' behaviour too, as all the students of the school knew each other irrespective of the group they belonged to. Older students helped the younger ones in various activities like climbing trees. We were told by a group of older students that they had decided to produce a drama with one of the younger group of students on their own initiative. The teachers and some of the older students reported that there was camaraderie among the parents too, as they knew each other closely and met each other outside the school to do things together. Their relationship with the school was also very lively and strong; parents were expected to contribute to the school's activities including classroom work depending on their area of interest and expertise.

A sense of individuality among the learners was also evident as it was observed that, in all classrooms, there were separate spaces to keep one's belongings along with the common spaces which were accessible to all. This helped children develop a sense of individuality even when they were related to others around them in doing things together. This also translates into their everyday activities; we saw that in the Red Group there was a small pit in which teacher sat and played *dholak*, while children moved around her singing and dancing. Each child was motivated to dance in groups together, yet was not to follow the steps of others but innovate independently. The teachers follow a pedagogy that strives to bring out the uniqueness of each child.

We witnessed many instances of Benson's (2009) ideas about healthy place attachments being translated into actual practice by students in Mirambika. Different students mentioned their favourite spots in the school where they liked spending most of their time, such as the Jungle Gym for the younger children and the Lotus Peak for the older ones, thus substantiating Benson's claims that forming healthy and positive attachments with particular places helps children experience familiarity and security within that place and, at the same time, nurture a holistic attraction for the outside world.

We observed that children were forming healthy attachments with their school space in other ways too. It was seen that the bulletin boards had been used in a personalized way by the students. In one of the classrooms, the students had put up their personal goals and strengths and weaknesses along with their photographs on the notice board. It was also observed that one of the girls moved into the courtyard right outside the dining room where she was swinging from the roots of the tree for some time. This suggests that spaces within the school were personalized, with each child forming her own bond with any part of the school. There was a feeling of belongingness with the school which was reflected in the way each child was seen interacting with the space in his/her own unique way. School spaces were not thought of as sacrosanct, marked by formal relations of teacher, students, and administration; rather, a great deal of informal relations between parents, students and teachers marked everyday interactions.

Similar to Ellis (2005), we found that pedagogical activities in Mirambika are carried out through the creative use of school space. In one of the examples cited above, we discussed that it was very common for students to use school architecture in order to learn about shapes. Teachers informed us that it was also a common practice for young children to move around the school and collect different materials, such as branches, shells, stones, using which they would learn to classify, make patterns, and *rangolis* for their project work. While identifying different plants and trees they made associations between different parts of a plant and its types. Taylor et al. (1988) in their article 'Architecture can Teach' suggest that a number of learning opportunities can be woven into the structure of a school so that the built environment becomes an active, three-dimensional textbook or teaching tool, rather than a passive space housing a disarray of "things." From the aforementioned examples, it is clear that design of the school architecture was an important learning aid, as was pointed out by one of the teachers, where the building itself becomes a tool for learning Math and Geography/Environmental Sciences.

Tagore believed that “We all know children are lovers of the dust; their whole body and mind thirst for sunlight and air as flowers do. They are never in a mood to refuse the constant invitations to establish direct communication which come to their senses from the universe. (Tagore cited in Bhattacharya 2014, 43)” He expressed his regret about one of his teachers not allowing a student to climb up a tree and read a book there. He believed that such proscriptive acts portrayed the school as a place where learning is restricted to imparting of lessons in a structured manner, which deprives the child of experiencing the world in its entirety.

The sense of place within the school has the potential to make school an important place in children’s lives. As children spend most of their day within the school, an environment facilitating security, autonomy, belongingness, empathy, and cooperation helps them relate meaningfully to their natural environment and their fellow beings.

We have used the notion of ‘sense of place’ to understand how students construct a sense of self in relation to others during their regular interactions within the school space. If the sense of place in the school evokes positive emotions, then it is likely to shape learners’ identities positively. This was evident in our study, wherein we saw a sense of self or self-identification getting created in an environment which was consciously infused with values like freedom, autonomy, equality, flexibility and a sense of community. This finding agreed with Ellis’s (2005) study wherein she witnessed the creation of positive identities among students through learning tasks that foster creativity and self-expression. She affirms that a sense of place, which develops with the interactions that take place in the everyday lives of students, is integral to the development of positive identities. We observed that instructional techniques within the Mirambika infused a sense of ease, flexibility, freedom from threat, compassion, lack of hierarchy, and learning at one’s own pace among the children. This is in line with Relph’s (1993) theorization wherein he affirms that, if a person feels safe, secure and at ease in a certain place, his sense of identity and belongingness to that place will be stronger. In this paper, we have discussed how a sense of place within the school influence learners’ identities and shapes the teaching-learning process. We noted that everyday life within the school is influenced by the place students and teachers inhabit. Place not only provides the background for these everyday interactions but plays a dynamic role in shaping them.

The marketization of education demands disciplined bodies and minds that can make an orderly contribution to the global economy through an unquestioned submission to the market forces as producers and consumers of goods and services. Contrary to this, child-centred education upholds that children are active constructors of knowledge through their innate abilities and participation in collaborative activities with others. School design and organization of space within it is crucial to facilitate this endeavour. Independent thinking, creativity, collaboration, and a positive sense of self can only be fostered in spaces that are consciously created to provide ample freedom to students to nurture the best in them without any fear of threat or subjugation. It was here in Mirambika that we found a favourable sense of place, fostering the creation of positive identity and a sense of belonging among students through their daily interactions and negotiations both inside and outside the school.

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Part III
Social Justice and Inclusive Practices

Chapter 12

Cracks and Crevices in Education Systems: Bridging the Gaps



Sudipta Ghose

The highest activity a human can attain is learning for understanding, because to understand is to be free
—Baruch Spinoza

Introduction

As I go to work in the mornings every day I come across a motley group of people of all ages, sprawled under a flyover, engaged in various acts of eking out a living. On some days, some are tying up fresh flowers in small bouquets, while little children dash amongst the traffic stuffing a bouquet up the face of commuters pushing a sale, and on other days, it is balloon toys on sticks. While waiting for the traffic signal to change, I watch the grubby little children running from vehicle to vehicle, knocking at car windows, peddling their wares. Sometimes a sale is struck and, at times, a window rolls down to hand a child some leftover food or drink. This is not a one of a kind set-up, but is a common occurrence not only almost all over New Delhi, the capital of India, but in all towns in the country. These children have no access to education of any kind, suffer malnutrition, and, more often than not, smoke and indulge in substance abuse from an early age. They grow-up to be either street peddlers, like their parents, or join the casual labour masses, or could even take to a life of crime.

A friend from the USA, sharing a ride with me, was appalled when a girl of about fourteen thrust a bunch of flowers through our car window and remarked that this could never have happened in her country as someone in authority would pick her up and arrange for her to be fed, clothed, and schooled. Why does this not happen in India, as well as in many other countries? The primary reasons are that the Right to Education Act (2009, in India), does not make it compulsory for all parents/caregivers to send their children to school. Hence, no law enforcement

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agency has the legal right to forcibly send an out-of-school child to a remand home or to school. The onus of placing a child in school lies with the guardians of the child; if they fail to make provisions for the education of the child, no legal action can be taken against them.

My students, who intern or work with non-government organizations working with street children, tell me that when social workers try to coax the children to come to classes for learning, the children are violently stopped by their care givers, to the extent that a child persisting in studying may be beaten black and blue, as even a few hours spent in pursuit of education would mean a loss of income for that many hours. Had the Right to Education Act included a clause which would give the State the Right to take charge of child welfare, over and above a negligent or abusive parent, and put the child in a Shelter Home or in foster care, ensuring at least the minimum stipulated number of years of education for the child, these street children would have a better chance in life. Though some agencies have carried out surveys on the street children in some cities, their overall population in India is not known. What is obvious is that these children eke out a living by vending petty items, or as labour, and many amongst them could be prone to substance abuse. Most suffer malnutrition, suffer diseases with little or no medical relief, and remain untouched by the Constitutional guarantee (Act 21A) of free and compulsory education.

It is difficult to estimate the number of out of school children (OOSC) in India and in the world, with actual numbers probably being much higher than the officially projected numbers. According to the GEM Report of UNESCO (2016, xviii), around the world, about 263 million children and youth are out of school. This is equivalent to about a quarter of the population of Europe. Estimations by several agencies suggest that about one-third of these OOSCs are in India. In its report 'Fixing the Broken Promise of education for all—Findings from the Global Initiative on Out-of-School Children (2015)', UNESCO acknowledges the complexity in attaining accuracy in determination of OOSCs, given that there is no standard definition of OOSC. For the purpose of this article, children not benefiting from the promise of the Article 21A of the Constitution of India, conferring on all children in the age group 6–14 years, the right to free and compulsory education, may be termed OOSCs. The World Bank (2015), in a brief, states, "... today, while more than 95% of India's children attend primary school, less than half of 16 year olds—just 44%—complete Class 10. This is a huge loss for a nation that will soon have the largest and youngest workforce the world has ever seen."

By the year 2030, it is estimated that, while the working population of the world decreases, India will have a workforce of 250 million and is projected to be the third-largest economy in the world. India needs to take drastic steps to provide quality education to this demographic dividend, else the potential of this human capital will go waste, and the promise of a national economic surge will meet a sad demise. The challenges afflicting the Indian education systems, such as poor infrastructure, outdated curriculum, and perennial shortage of competent teachers, need to be addressed swiftly. Ill-organized education systems play a major role in pushing out enrolled students, increasing the absolute numbers of the OOCs.

Skills Needed or Learnt Outside the School Are not Recognized by the School

Traditionally, skills have been learnt within families, passed on from generation to generation, or as apprentice to other workers. Carpenters, plumbers, weavers, dyers, and even artists, performers and sportspersons, all have learnt their skills either in their families or in private coaching centres, or on the job. Many traditional jobs are dying out because of changing demands of buyers, or due to the apathy of government agencies. I have spoken to skilled women weavers who have abandoned their expertise, as demand for traditional wear such as the ‘sari’ has dwindled. There is no check on the profiteering of middlemen, and schools offered no opportunity to them for skill upgradation. Thus, they migrated from their villages, which were the centres of traditional weaving, and entered the unskilled labour market in large cities.

Singers, dancers, and sportspersons have not learnt their skills in schools; many aspiring artists and players had to give up either their passion or formal schooling. The famous cricketer Tendulkar is a school dropout, and so are many singers, dancers, actors, acrobats, sculptors, and painters. Carpenters, metal-smiths, glass blowers, have all learnt their skills either as part of their family trade or from masters from the fields. Most life skills are either learnt in out-of-school settings or in private learning centres. Many dying skills are finding new takers. In a joint endeavour of the University of Florida’s Institute of Food and Agricultural Sciences and the Florida Fish and Wildlife Conservation Commission, struggling to tackle an invasion of Burmese pythons, two members of the Irula tribe of Tamil Nadu, India, who are expert snake catchers, were flown to Florida. In eight days, they were able to catch as many as 13 pythons. Earlier, the same Irula tribals had been flown to Thailand to assist a group of researchers there, working on a snake project, by catching cobras and kraits there (*Washington Post*, Jan 26, 2017).

Excluded from school curricula are not only traditional skills, but also skills related to prevalent or upcoming technology and gadget manipulation. Children are adept at working on computers and smartphones much before they enter schools. Take the case of Artificial Intelligence expert, the 13-year-old Canadian, Tanmay Bakshi, who went to Australia for the IBM Watson Summit, which brought together experts in artificial intelligence, to discuss how the technology can help people and businesses in the future. “Tanmay has toured the world to spread the word on computer programming, including giving public lectures and joining forum discussions, which has meant he has left traditional school in lieu of home schooling.”¹

Schools around the world have not yet been able to incorporate processes and methodologies for the nurturance of individual talents, entailing wastage of human endowments.

¹Patrick Wood, ‘Meet the 13-year-old prodigy taking IBM and artificial intelligence by storm.’ ABC News Breakfast. 26 July 2017. <http://www.abc.net.au/news/2017-07-26/meet-the-teen-taking-ibm-and-artificial-intelligence-by-storm/8743880>.

Safety in Schools

Schools are expected to provide safe and peaceful environs wherein children can develop holistically. Unfortunate incidents around the world, such as mass shootings, illustrate that had children not gone to school on that fateful day, they would have been alive or uninjured. Recent cases of children in India being raped, or even stabbed to death have shaken all. Contaminated water and food served in schools, unhygienic toilets, overflowing dustbins and drains, platters of rotting food scattered here and there, mosquitoes and flies buzzing around, termites, and even rodents and stray dogs, pose grave dangers to the health of students. Hawkers thronging school gates, peddling food of questionable hygiene and even laced with drugs to get children hooked, are common. A research in Hong Kong (Tong and Lam 1998) found heavy metal contamination in floor dust in school. Exposure to infectious diseases, injuries in playgrounds and within premises (ceiling fans and roof plaster falling on children, tripping and falling on broken tiles, staircases and toilets, getting hurt by broken furniture, are some examples), pain caused by heavy backpacks, violence inflicted by other students and even teachers, are risks faced by children every day. Gang wars in schools in countries around the globe, such as the USA, Mexico, Thailand, South Africa and many more, have been reported 'The presence of gangs in schools compromises the safety, well-being, and academic progress of students', (Issurdutt 2011). Sharkey et al. (2010) researched and cautioned about the harmful influence of gangs in schools. The entry of digitization in schools has come with a plethora of new dangers for children.

The preventive measures, usually taken by schools, is limited to posting a guard at the school gate, and perhaps installing some safety equipment for fighting a fire. Earthquakes, fires, floods, and even rioting incidents have prompted the Central and many State Governments to draw up and issue directives to schools to fight disasters (National Disaster Management Guidelines–School Safety Policy 2016). Some training of staff and students and mock drills have taken place in various schools. But the dangers that lurk within and without the school perimeter are many more, of which there seems to be no awareness, as is evident from a perusal of School Safety Draft Series of The National Disaster Management Division 2016 and Other such bodies of various State Governments. Other school safety programs in India also seem to be focused on disaster management. There has been no comprehensive evaluation of the everyday dangers that a child may be exposed to within and around the school premises, in India.

As the children are spending most of their time in school, the concern of parents about the safety of school children is increasing every other day regarding their physical safety, mental & emotional health or child abuse owing to increasing incidents involving safety and wellbeing of school children. The onus for safety and security of children in school campus shall solely lie upon the school authorities. It is a fundamental right of a child to engage and study in an environment where he/she feels safe and is free from any form of physical or emotional abuse or harassment.²

²Central Board of Secondary Education, Circular No. 19/2017, 12 September 2017. <http://cbse.nic.in/newsite/circulars/2017/Circular%20Safety%20in%20School%2012.09.2017.pdf>.

Countless children fall through the gaps in the safety nets, in vast numbers of schools across countries, causing irreparable bodily and mental harm to them.

Disparities Amongst and in Schools

Yawning disparities in society are replicated in education systems; schools in most countries are also socio-economically segregated. Children from educated, affluent, and powerful families are privy to privileged schooling, while those from the lower middle and poorer classes of society have to make do with education of questionable quality. Perusal of the World Inequality Database on Education (WIDE) brings to the fore differences in “education outcomes between countries, and between groups within countries, according to factors that are associated with inequality, including wealth, gender, ethnicity, and location” (WIDE, GEMR, 2017).

Bradbury et al. (2015), an international team of social scientists from the United States, Australia, Canada and the United Kingdom, in their book ‘Too Many Children Left Behind: The US Achievement Gap in Comparative Perspective’, compared children and their learning outcomes, from these four countries, from the day children entered kindergarten to eighth grade, and based on data from large national surveys of children. They found that most of the gaps between advantaged and disadvantaged children exist at school entry and continue during school years, and that children from the US lagged behind their counterparts from the other three countries. Children from disadvantaged backgrounds lack resources and stimulating environment necessary for their cognitive growth. The three countries, other than the US, provide stronger social services and supports. For narrowing its achievement gap, the authors say that the US could adopt public policies that expand support for children in the form of tax credits, parenting programs and other measures.

In India, many educational reforms have taken place in the last few decades. Nevertheless, disparities in the quality of education available, and achievement of children belonging to different sections of society, is huge.

India has succeeded in ensuring quasi-universal primary education after the Right to Education Law, which mandates free and compulsory elementary education to all children aged 6-14, came into force in 2010. Learning outcomes however, are disappointing and have failed to improve The literacy rate remains lower than most other emerging economies. In addition, the attendance ratio drops sharply from primary to secondary education and inequality in access is large: less than 40% of the children from the poorest fifth of the population attend secondary schools, compared to 72% for the richest of the population. (OECD 2017, 53)

Attaining Quality in Education

It is not enough to give the children of the world the right to education; it is equally, if not more, important to provide quality education. Hanushek et al. (2015) posit that there is enormous scope for state economic development through improving the quality of schools. Alden and Strauss (2016) state that,

Human capital is perhaps the single most important long-term driver of an economy. Smarter workers are more productive and innovative. It is an economist's rule that an increase of one year in a country's schooling level corresponds to an increase of 3 or 4 percent in long term economic growth. (1) Most of the value added in the modern economy is now knowledge-based. Education, especially at the college level, will therefore likely become even more important for a nation's economy and an individual's income. And to the extent that labor markets now transcend national borders, the international competition for those high-value knowledge jobs will only grow more fierce. (9)

It is not easy to qualify the concept of 'quality education' as it is context dependent. Quality education is often measured by PISA (Programme for International Student Assessment), the standardized test of the Organization for Economic Co-operation and Development (OECD), and countries are ranked accordingly. According to the Brown Center Report on American Education (2017), the US continued to register mediocre scores, as it has done since PISA began in 2000. In 2009, India ranked second to last amongst 73 countries tested for PISA. Ever since, India has not participated in these tests, citing the unfavourable cultural bias of these tests.

PISA tests have their limitations in that they measure only certain aspect of formal education and do not give a holistic assessment of all features of education. Critical thought and creativity are core academic skills that need to be nurtured in learners. Manifestation of reasoning and rational thought could elude even those who have received higher education in the best of institutions. The strangest of superstitions are practiced by rocket scientists in the USA, Russia, and India. The consequences of irrational thought and beliefs could be devastating, such as branding women as 'witches' and torturing and even killing them, in India, Nigeria, and possibly other countries. For competitive advantage, creativity and innovations are vital, and need to be ingrained in education systems right from the primary stage. This has been introduced by Norway, Finland, and a few other countries, where project-based curricula and use of 3D printers in primary classes have been introduced. Other countries need to catch up in nurturing critical thought as well as creativity.

Being dynamic in nature, systems of education cannot have any eternal or universal quality rubrics. A paper presented by UNICEF at the meeting of The International Working Group on Education Florence, Italy June 2000, states: "Definitions of quality must be open to change and evolution based on information, changing contexts, and new understandings of the nature of education's challenges. New research—ranging from multinational research to action research at the classroom level—contributes to this redefinition" (5). Education systems are

syllabus-, textbook-, and teacher-centric, and the primary method of learning is by rote. Excess testing has made education examination centred with little or no stress on development of critical thought or nurturance of creativity. In their quest for mechanisms of quality education, forward-looking nations have adopted alternate processes, though their outcomes yet to be evaluated.

It is reported (*Washing Post*, Sept. 28, 2017) that, for schoolchildren, the new Dutch government has plans of compulsory viewing of Rembrandt's masterpiece, 'The Night Watch', visiting parliament at least once, and to have lessons on the national anthem, including the meaning of the text and the origins of the melody. In Finland, which is said to have the best education systems in the world, children do not begin school till they are seven years old. Instead, they learn through play, though their play is planned and monitored; when in school, learning cursive handwriting has been dropped in favour of keyboards, in recognition of changing methods of communication. According to the Eleanor Harding, in the *Daily Mail* "Half of primary schools will adopt the traditional Chinese method of maths teaching, in a Government drive to stop British youngsters falling behind their Asian counterparts. They will ditch 'child-centred' styles and instead return to repetition, drills and 'chalk and talk' whole-class learning. Teachers will be offered training, textbooks and advice on how to adopt the 'Shanghai maths' method."³

Despite having one of the largest education systems in the world, India has little claim to quality education. Multiple parallel systems of government, private, central, and state schools have translated into wide gaps in teaching-learning standards. At the bottom of the heap lie schools running out of dilapidated buildings, or from makeshift tents or even open spaces, exposed to the vagaries of nature, with broken furniture and disinterested or truant teachers, where little learning takes place. At the top end are posh schools and higher education institutes, comparable to the best in the world, turning out students ready to compete with their counterparts anywhere in the world. Bridging this seemingly insurmountable gap is a challenge that the government and private agencies need to engage with for the nation to be able to maintain its position of being the fourth largest economy of the world.

Disconnect Between Education and Employment

India has the third largest system of higher education, and yet a critical skills-gap exists. Technology and industrialization have hurtled ahead while education has not kept pace. Many jobs that exist today were not there a decade back. Though technology is increasingly finding its place in the curricula of schools and colleges, the extent of digital literacy is far from satisfactory. With transformative initiatives

³Eleanor Harding, 'Half of primary schools set to teach maths Chinese-style: Children will be required to practise sums and exercises until they can prove they have mastered them,' *Daily Mail*, 12 July 2016. <http://www.dailymail.co.uk/news/article-3685552/Half-primary-schools-set-teach-maths-Chinese-style-Children-required-practise-sums-exercises-prove-mastered-them.html>.

like Digital India, Informatics, mushrooming Start ups, advances in Robotics, Smart Cities, Skill India, and so on, the skills gap between learning in formal institutions and requirements of offices and industries is wide. Rapid innovations and dissemination of technology, diversification of media, as also of life styles, lead to the speculation that, by the time the children who are in school today are ready to join the work force, there will be a plethora of jobs that do not even exist today. These jobs will require skills that would have evolved by then. The increasing sophistication of Artificial Intelligence, the Internet of Things (IoT, physical goods with chip/sensors) and increased automation across industries and offices, will displace the commonplace jobs of today. Past history shows that increased use of technology does not necessarily translate into widespread unemployment, but that there is a shift in the expected competencies, and a need for re-skilling of employees.

Sadly, the current systems of education are paying scant attention to the projected requirements of industries of tomorrow. The traditional education model no longer fulfils the requirements of the job market.

Narrowing the Gaps

Expansion of education systems has not been proportional to the population growth in India. With the rise in aspirations of parents for their children, the Right to Education Act (RTE, 2009), the incentives and supports by the government to students in the form of mid-day meals, free books and uniforms and scholarships for children, there has been a surge in school admissions in government schools. A consequence of the RTE Act has been reservation of 25% seats for children of the economically weaker sections (EWS) in private schools. Overcrowded classrooms with children with diverse abilities, poor infrastructure, and overloaded daily time schedules are a formidable challenge for even the bravest of teachers. The upshot of mass teaching is dilution of teaching-learning methodologies. The classic mode, of teacher-centric, text-book pivoted, rote learning methods, is prevalent in government, private, and even elite schools. In a class of sixty or more students, the consequence of the teacher's inability to cater to individual abilities and interests is the spawning of private tuition classes held privately outside the school. For smaller children, this means getting individual attention or in a much smaller group, for parents, it entails paying for the classes. The teaching-learning methodologies of these classes are much the same as those of traditional classrooms. Many children attend private classes to learn skills not offered in schools, such as music, dance, art, or computer classes or sports activities. For older students, these private classes may become more elaborate, and be geared for preparation for entrance examinations for professional courses like engineering or medical streams. At this stage, the competition becomes fiercer and more stressful for students. Kota, a small town in Rajasthan is a coaching hub where students from both neighbouring and far off places come to live isolated lives in rented rooms. The psychological stress of

competitiveness and isolation has led to quite a number of suicides. Evidently, the prevalent mode of private tuitions or coaching classes has its limitations.

Schools are expected to be safe havens for children and yet, non-existence of any system of audit of safety in schools, has led to numerous tragic losses of life and limb of children in schools. Sadly, schools have been known to have become aggressors by causing physical as well as psychological harm to children by meting out harsh punishments. Rules and guidelines regarding enforcement of discipline have to be carefully laid down and stringently followed. Large schools have corridors, terraces, nooks and corners, which could turn into places of dangerous mischief. Such spots need to be identified and brought under vigilance of security personnel or cameras. The entire school should be evaluated for hazards and a safety plan chalked out. Setting up of a department of campus safety with designated safety marshals and safety paraphernalia may be incorporated in policies and directives for schools. Drills of safety protocols would prevent grief. It should be explicit at all times that there is no place for violence or aggression in educational institutions. Preparation for meeting unexpected accidents, injuries, infections, and other safety threats should be prioritized.

Transformative Teaching and Learning

About dismal schools and classrooms, Spicker states, “Problems include low resources, limited curriculum, and low teacher expectations, and these are reinforced by streaming, the restrictive examination system, and high teacher turnover. Despite the importance of home background, good schools can make a difference.”⁴ Palpable solutions to overcrowded classrooms, perpetual shortage of teachers, and poor quality of teaching-learning lie in adopting good practices and knowing what to avoid. Fewer but smarter tests, homework which is challenging for the student, but does not burden the parents, and activities that require learners to think critically and creatively, would change the futile educational method of memorization and forgetting after examinations. Strengthening present systems of educational systems by changing policies and practices, increasing funding, and incorporating teaching-learning of future-oriented skills, would be the most apparent and straightforward ways for bringing in change.

The backbone of a robust system of education is an army of competent teachers. In India, thousands of posts of teachers lie vacant, with scanty numbers of temporary or guest teachers filling in. While choosing a career, teaching is the last choice of meritorious students. This is in contrast with Finland’s high quality, most respected in society, teachers, who work autonomously. Teaching-learning

⁴P. Spicker, ‘Education and social policy: An introduction to Social Policy,’ 4 Aug 2017. <http://spicker.uk/social-policy/education.htm>.

methodologies have kept pace with the increasingly digitized lifestyles and the required life skills.

Primary school children in many countries are using 3D printers to fire up their imagination and creativity. The disparity with Indian schools is brought out by the Annual Status of Education Report (2016), which states that the proportion of class 3 children who can read Class 1 text is 42.5%, which is dismal, but an improvement over the finding in 2014, when the proportion was 40.2%. If India has to catch up with the quality of education in educationally advanced nations like Finland and Norway, then political will is an urgent necessity; the role of other stakeholders like educationists, policy makers, philanthropists, teachers, and parents are also vital for bringing in progressive curricula and methodologies.

Vignettes from the Field

The children who have benefitted from the Right to Education Act (2009) are in the age-group of 5–8 years only. The older ones have been denied the promise of the Indian Constitution of free and compulsory education. There is no government scheme of any bridge-course for children, who are too old to be admitted in kindergarten or Class 1, and can learn enough to be directly admitted to an age-appropriate class. Students who are victims of sub-standard education in higher education levels have hardly any chance of catching up with their counterparts who have received privileged quality education. Non-government organizations and individuals have stepped in some pockets in India to provide the necessary educational support. Some vignettes from the field are cited here.

Aparajita Baal Niketan in Chittaranjan Park, New Delhi, run by *Aparajita Mahila Samiti*, an association of women concerned about out-of-school-children from the neighbourhood.⁵ Around 60 children study in three rooms on the first floor of a small building, that was granted by the government to this non-government organization (NGO), after running from two temporary sheds for years. The children get to study free of cost and also receive free uniforms, books, and nourishing mid-day meals. This NGO runs on donations, sponsorships, and by renting out the ground floor area during non-school hours. The older children at this centre are specially coached for enabling them to join an age-appropriate class of a regular

⁵HT Correspondent 'CM inaugurates new school building for underprivileged'. *Hindustan Times*, 10 September 2011. www.hindustantimes.com/delhi/cm...for.../story-qq5vjmlfQEzKqTNmWsKI.html. Loveless, T. (2017, March 27). *Brown center report on American education: International assessments*. <https://www.brookings.edu/research/2017-brown-center-report-part-i-international-assessments/>. Martin, S., Diaz, G., Sancristobal, E., Gil, R., Castro, M., & Peire, J. (2011). New technology trends in education: Seven years of forecasts and convergence. *Computers & Education*, 57(2), 1893–1906. Mullick, R. (2017, June 29). Super 30 expands reach, to include Class 10 pass-outs too. *Hindustan Times*, <http://www.hindustantimes.com/.../super-30.../story-tQPy8mz25NPPSQRosODmVO.html>.

school and are also helped in securing admission. *Butterflies* is an NGO that has been working for street children and children from the most deprived populations, fulfilling their nutritional and educational needs.⁶ *NavGurukul*, an endeavor of an IIT Delhi alumnus and a high school dropout, is an alternative to college education, by providing access to software engineering training to the underprivileged. *Super Sixty*, Patna is a highly ambitious and tremendously successful coaching program for bright students from underprivileged families. Sixty students are coached intensively for competitive entrance examinations of engineering colleges, and the success rate is near total every year.

The success of NGOs in small pockets points to the need for government initiatives for developing human capital and prevent sizable amounts of potential from going waste.

Increased Use of Technology in Schooling

Technology is changing teaching-learning methods drastically. As costs decrease and digitization expands, learning will be more and more universal, individualized, and free from rigid and limited syllabi. The internet is flooded with tutorials of all kinds for unlimited learning of all kinds of items. Virtual classrooms and laboratories, animation, gamification, special effects, all make learning much more meaningful and interesting. E-learning, including self-paced learning and assessing and live, on-line, learning has widened the reach of distance learning. Progressive schools are increasingly adopting technology-based classroom learning and assessing. Kaplan (2015) says that technologies are capable of replacing teachers and professors in a wide variety of settings. The current buzzword for this is the flipped classroom: students watch lectures and learn the material online at home, then do their homework at school with the help of teachers and teaching assistants. Increased expansion of artificial intelligence and other technologies for learning is fast making out-of-school learning more popular, rapidly reducing the importance of formal educational institutions. The world is awaiting this change.

Concluding Remarks

India is at high risk of missing the opportunity of the demographic dividend that is available now, if urgent measures are not taken to fulfil the Constitutional promise of providing free and compulsory education to all children. The loss will not be India's alone, but that of the world, in this age of globalization. The government is making feeble attempts for a developed human capital, but the gap between what is

⁶<http://www.butterflieschildrights.org/about-us.php>.

being done and what needs to be done is vast. Affordable private schools (APSs) are filling in this gap to a certain extent, providing children of lower income families with improved quality education which is not too expensive. Elite private schools, too, now have to take in 25% students from economically weaker sections (EWS) of society. Recently, some State Governments have put in many checks on the fee structure and other aspects of private schools.

This unhappy state of affairs is the result of a socialist belief that only the state should provide education. Since the Indian state has never had enough money to do all that the socialists wanted, it has grudgingly accepted the entry of the private sector, but shackled it with the horrific controls of license-permit-inspector *raj* (rule). This has discouraged honest individuals from starting colleges but encouraged corrupt politicians to get into the act. Our attachment to state-run colleges is bizarre when private universities abroad are among the best in the world.⁷

Recognition and appreciation of private education institutes as agencies of deliverance of quality education will strengthen their hands.

Given the vast numbers of school-age children still out of school, and the dubious quality of education available to those within most schools, processes for raising the quality of education in government and private schools need to be initiated, and safe and secure learning environments guaranteed to all learners. Not all learning takes place within school precincts; more museums, galleries, and virtual learning centres need to be created for learning by observation, simulation, and interaction. As increased digitization makes learning more and more individualized, educational institutions may soon lose their pivotal position in learning processes and disparities in education may be erased.

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⁷G. Das, 'Saved by the Bill? Reform aims to fix India's medical education,' The Times of India, Editorial Page, 25 September 2016.

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Chapter 13

Unlocking Giftedness: An Introduction to Giftedness for Teachers in India



Inderbir Kaur Sandhu

Introduction

It was found that, while Indian gifted education research stretches back to the 1960s, it has been isolated in certain locations (namely *Jnana Probhodhini*, Pune and initiatives at Delhi University). Little is known about the efficacy of application, and provision has also been scant. It appears that there has been an over-reliance on learning models and assessment tools transferred wholesale from western contexts, which is more suited for the western system of education and therefore, not entirely applicable in the Indian education context.

For teachers, at the national level the NIAS (National Institute of Advanced Studies) Gifted Education project, in Bangalore, has been conducting a series of teacher workshops to train teachers in identifying and nurturing gifted children. A number of other training workshops are done privately. Nevertheless, in general, it was found that in India, most teachers are not aware of the true meaning of giftedness, let alone issues and challenges that come along with it. As crucial as it is for parents to understand giftedness, it is also important that teachers are aware and address the issues and challenges to enable gifted children develop to their full potential.

This chapter attempts to introduce the basics and importance of understanding gifted education for teachers, with emphasis on the scenario in Indian schools. The discussion would include universal definitions, characteristics of the gifted and possible problems associated with it, some misconceptions, awareness in India, scenario in schools, and curriculum for the gifted. It is expected that this chapter will serve as an eye-opener for teachers across all grades, including early childhood.

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A Few Definitions

Before going further, the term ‘gifted’ should be looked into carefully. It is imperative that the term ‘gifted’ is understood well, as definitions provide a base for identification and recognition. It also provides the framework for gifted education programmes, and help to guide key decisions in designing a suitable curriculum for this special population. There is no universally accepted definition of giftedness and some are revised over time to suit the current needs.

A frequently used definition emerged from the National Association for Gifted Children (NAGC). The NAGC, in their Position Statement (2010), defined gifted individuals as those who demonstrate outstanding levels of aptitude (defined as an exceptional ability to reason and learn) or competence (documented performance or achievement in top 10% or rarer) in one or more domains. Domains include any structured area of activity with its own symbol system (mathematics, music, language) and/or set of sensorimotor skills (painting, dance, sports).

One of the earlier definitions, that is used as a base in most programmes, is by J. R. Renzulli. Renzulli (1978) believed that gifted behaviour occurs when there is an interaction among three basic clusters of human traits: above-average general and/or specific abilities; high levels of task commitment (motivation); and high levels of creativity. Gifted and talented children are those who possess, or are capable of, developing this composite of traits and applying them to any potentially valuable area of human performance. As noted in the Schoolwide Enrichment Model (Renzulli 1977), gifted behaviours can be found “in certain people (not all people), at certain times (not all the time), and under certain circumstances (not all circumstances).”

According to Gagné (2003), gifted students are those whose potential is distinctly above average in one or more of the following domains of human ability: intellectual, creative, social, and physical. The keyword here is potential. Gagné believes in the power of environmental factors, that of being natively intelligent, is not sufficient. More importantly, what is required, along with the innate gift, is support and guidance to achieve her/his gifted potential. This is where the importance of school and home working together to support and encourage gifted children becomes crucial.

Rather than holding strictly to one definition, educators prefer a multi-faceted definition of giftedness that includes children with exceptional capacity in one or more broad areas of skill. As such, some skill areas may present difficult measurement issues, particularly of capacity rather than achievement. Therefore, a good definition that takes into account various factors could conclude that gifted children are those who perform, or rather have the capability and capacity to perform, which is clearly at a level significantly beyond his or her chronological-aged peers. These individuals have an intellectual ability that is higher than the average. This gift is innate, not acquired or learnt. The abilities and characteristics would require special provisions and, at the same time, socio-emotional support from everyone involved especially the family, the school, and educational context. Within this constraint, the top 2–5% of the population in one of the fields are generally regarded as gifted.

Characteristics of the Gifted

It should be noted that gifted children are so diverse that it is not possible to determine conclusively a set of characteristics that every gifted child would have. Having said that, there are many common characteristics shared by gifted children.

Characteristic traits are listed by six broad categories of giftedness such as general intellectual ability, specific academic aptitude, creative thinking and production, leadership, psychomotor ability, visual and performing arts. No child can possibly be gifted in all the six categories, but some may have gifts in more than one domain. Even within a specific category, they may be extremely capable in one aspect. For instance, within specific academic aptitude, students usually have one or two subjects that they excel in and are very passionate about. There are many lists of characteristics for the gifted but it should be noted that none of them are exhaustive and gifted children may only share some of them. Webb et al. (2007) listed some distinct characteristics that are commonly observed among gifted children, such as:

- Unusual alertness, even in infancy
- Rapid learner; puts thoughts together quickly
- Excellent memory
- Unusually large vocabulary and complex sentence structure for age
- Advanced comprehension of word nuances, metaphors, and abstract ideas
- Enjoys solving problems, especially with numbers and puzzles
- Often self-taught reading and writing skills as pre-schooler
- Deep, intense feelings and reactions
- Highly sensitive
- Thinking is abstract, complex, logical, and insightful
- Idealism and sense of justice at early age
- Concern with social and political issues and injustices
- Longer attention span and intense concentration
- Preoccupied with own thoughts—daydreamer
- Learn basic skills quickly and with little practice
- Asks probing questions
- Wide range of interests (or extreme focus in one area)
- Highly developed curiosity
- Interest in experimenting and doing things differently
- Puts idea or things together that are not typical
- Keen and/or unusual sense of humour
- Desire to organize people/things through games or complex schemas
- Vivid imaginations (and imaginary playmates when in preschool)

Some of these characteristics are more easily observable by parents, as they are present and demonstrated when the child is very young, or before formal school age. In fact, it has been said that parents are best nominators of early giftedness in their child. However, teachers could look out for a few, more easily observable,

tendencies in the classroom. For instance, teachers would notice that these children tend to have advanced thinking and may see things differently than most their peers; sometimes even to the point of being ridiculous for the common man. When asked to explain (which may or may not happen), teachers would find that their thoughts do reflect deep thinking processes. This goes hand in hand with their unexpected, yet remarkable understanding of things, well beyond their years. Unfortunately, this would only be possible if teachers are aware of what to look out for; in other words, if they have had some form of formal training.

Gifted children are also found to be more intense, sensitive, and driven than their peers. This could be explained by their 'overexcitabilities'—a term coined by Dabrowski (1964)—which could relate to the intensities faced by gifted individuals. Overexcitabilities (OEs) are inborn, heightened abilities to receive and respond to stimuli. They are expressed in increased sensitivity, awareness, and intensity. Each form of overexcitability points to a higher-than-average sensitivity of its receptors. As a result, a person endowed with different forms of overexcitability reacts with surprise and puzzlement to many things; he collides with things, persons, and events, which in turn bring him astonishment and disquietude (Dabrowski 1964, 7).

Dabrowski listed 5 overexcitabilities: intellectual, imaginal, sensual, psychomotor, and sensual. Intellectual overexcitability includes having a curious, questioning, and sharp mind. For instance, a child with intellectual overexcitability would ask questions, make the connections and arrives at such deep understanding that it would leave adults totally amazed. Imaginal overexcitability is fuelled by creativity. This child has a vivid imagination, a love of stories and fictional worlds. Teachers may find children with this overexcitability to be daydreaming, doodling, or staring into space (while their imagination is working overtime).

Those with sensual overexcitability would have heightened sensitivities and could receive far more input from their senses than expected. This is usually seen from their strong reactions to sounds, light, textures, or tastes. Reactions could be either positive or negative. With a positive reaction, the child would have a desire to continue experiencing a sensation, and with negative reaction, the child would avoid the stimuli. Children with psychomotor overexcitability are highly energetic and sometimes mistaken for ADHD. It might manifest as fidgety behaviour, rapid, excessive talking, and overactive physical behaviour. And the fifth, emotional overexcitability may appear to teachers as over-dramatization or attention seeking behaviours. These children tend to respond to a situation (be it joy or sadness) with deep intensity as compared to other children. This sensitivity could manifest as a strong compassion, empathy, and caring for others.

Many gifted individuals with intensities appear to have an ability to function as specialized and highly sensitive receptacles for incoming stimuli. They appear to see, hear, sense, feel, think, and imagine everything to a very high degree, which is somewhat almost completely invisible to others. Because of these intensely tuned perceptions, they can then create, innovate, perform, and astound. At the same time, they can also suffer, feel pain very deeply and cause many to struggle, sometimes their entire lives, in coming to terms with them. This seems quite specific especially for the ones at the highest levels of ability.

However, it is important to emphasize that not all gifted or highly gifted individuals have overexcitabilities. Having said that, these overexcitabilities are found to be more noticeable in the gifted population than in the average population (Piechowski 1991; Silverman 1993; Tiller 1999).

In addition to their intensity, these children often know much, or all, of the school work in their grade and beyond. When the ability to master information is at a higher pace, they appear to have a tendency to get bored in the classroom. For the young gifted child, she or he may either manifest boredom by being disruptive or trying hard to fit in with the rest in order to gain acceptance, which may result in underperforming.

Possible Problems Associated with Characteristic Strengths of the Gifted

While the gifted have quite a few characteristic strengths that help them advance intellectually, they may also have potential problems due to those very strengths. Having these strengths can unfortunately make these individuals feel vastly different from others, and thus always in search of a way to fit in, which includes suppressing their gifts.

Some of these particularly common characteristics regarded as strengths but may come with possible problems are shown in Table 13.1 (Clark 1992; Seagoe 1974).

Even though these characteristics are seldom inherently problematic by themselves, more often than not, a combination of these characteristics may lead to certain behavioural patterns such as uneven development, peer relations, excessive self-criticism, perfectionism, avoidance of risk taking and multi potentiality.

In the classroom, a teacher who is not aware of problems associated with the gifted may simply assume that the child is being disruptive or has a learning disorder. The child may then be sent for counselling. The counsellor who may, again, be ignorant about such problems (and its implications) within the gifted population, would either use inappropriate interventions or label the child as having a pathological problem.

According to Webb et al. (2004), there are many gifted and talented children (and adults) who are being misdiagnosed by psychologists, psychiatrists, paediatricians, and other health care professionals. The most common misdiagnoses are: Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (OD), Obsessive Compulsive Disorder (OCD), and Mood Disorders such as Cyclothymic Disorder, Dysthymic Disorder, Depression, and Bi-Polar Disorder. These common misdiagnoses stem from ignorance among professionals about specific social and emotional characteristics of gifted children that are then mistakenly assumed by these professionals to be signs of pathology, which is very unfortunate. Unfortunately, very few psychologists, psychiatrists, paediatricians, or

Table 13.1 Strengths of giftedness and their possible problems

Strengths	Possible problems
Acquires/retains information quickly	Impatient with others; dislikes basic routine
Inquisitive; searches for significance	Asks embarrassing questions; excessive in interests
Intrinsic motivation	Strong-willed; resists direction
Enjoys problem solving; able to conceptualize, questions teaching procedures: abstract, synthesize	Resists routine practice;
Seeks cause-effect relations	Dislikes unclear/illogical areas (like traditions or feelings)
Emphasizes truth, equity, and fair play	Worries about humanitarian concerns
Seeks to organize things and people	Constructs complicated rules; often seen as bossy
Large facile vocabulary; advanced, broad information	May use words to manipulate; bored with school and age-peers
High expectations of self and others	Intolerant, perfectionistic; may become depressed
Creative/inventive; likes new ways of doing things	May be seen as disruptive and out of step
Intense concentration; long attention span and persistence in areas of interest	Neglects duties or people during periods of focus; resists interruption; stubbornness
Sensitivity, empathy; desire to be accepted by others	Sensitivity to criticism or peer rejection
High energy, alertness, eagerness	Frustration with inactivity; may be seen as hyperactive
Independent; prefers individualized work; reliant input; nonconformity	May reject parent or peer control on self
Diverse interests and abilities; versatility	May appear disorganized or scattered; frustrated over lack of time
Strong sense of humour	Peers may misunderstand humour; may become "class clown" for attention

Adapted from Clark (1992) and Seagoe (1974)

other health care professionals receive any training about characteristics of gifted children and adults, particularly behaviours of bright, creative persons that can sometimes resemble or conceal disorders. In the end of it all, while some gifted children are erroneously labelled and medicated for mental health disorders they do not have, others are unrecognized for learning or mental disorders they may have.

Even in situations where gifted children received a correct diagnosis, giftedness is still a factor that must be considered in the treatment plan. However, it is common that teachers and counsellors typically overlook the giftedness component due to the lack of training and understanding.

Some Misconceptions About Gifted Children

One of the most common misconceptions is assuming that the gifted can breeze through the school system on their own and do not need help. However, undoubtedly even the best sports person in the world would need a coach to train and guide her or him to perform at their maximum ability. In the same vein, gifted students need guidance from teachers who are trained to handle, challenge, and support them to fully develop their potential. The teacher plays a crucial role in supporting and nurturing their gifts and talents.

Another interesting myth about gifted children is the assumption that all children are gifted. It is true that all children have gifts but not all children are gifted. Being gifted does not connote good or better; it is a term used for students who have an advanced ability to retain and apply information in one or more areas based on the six broad category of giftedness. More importantly, it allows students to be identified for services that meet their unique learning needs.

It is also commonly assumed that gifted children are fine when placed with others in the regular classroom. Teachers always try to challenge their students but may not understand the needs of gifted students and how best to meet their needs. A national study conducted by the Fordham Institute found that 58% of teachers have received no professional development focused on teaching academically advanced students in the past few years, and 73% of teachers are in agreement that, too often, the brightest minds are bored and under-challenged in mainstream schools. They are not given sufficient opportunity to thrive. This report confirms what many families have known: not all teachers are able to recognize and support gifted learners (Farkas and Duffet 2008).

Some educators wrongly assume that acceleration (such as early entrance to Kindergarten, grade skipping, or early exit) is not an option as it causes social and emotional problems with the gifted. Research has proven that most of these children are more comfortable with mentally similar peers who share their interest than they are with children the same age (Colangelo et al. 2004). Hence, acceleration placement options should be considered for these students with a mentor to support their socio-emotional needs.

More often than not, students with disability (learning or physical) are taught by focusing on their weaknesses rather than their strengths. Therefore, a student who is gifted and has a disability is often assumed to need help with the disability only and the gifts may be ignored. In fact, a good number of these children (termed “twice-exceptional”) go undetected in regular classrooms because their disability and gifts mask each other, making them appear “average.” It is crucial to focus on these students’ abilities and allow them to have challenging curricula in addition to receiving help for their learning disability (Olenchak and Reis 2002).

It is also common to assume that all gifted children thrive and a child that underachieves in school cannot be considered as gifted. Contrary to common stereotypes, giftedness is not synonymous with high academic achievement. The fact is that there may be a number of reasons leading to a gifted child performing

poorly. Gifted children are usually expected to be mature classroom leaders, a description which may not fit most gifted students. Some are the class clowns, the lonely awkward child in the back row, or even the troublemaker. An unchallenging and dull classroom situation can be very boring and eventually frustrating for a gifted child. This may cause them to lose interest, daydream, or distrust the school environment, which eventually leads to discontentment and negative thoughts toward school. Therefore, it is very important for the teacher to be able to recognize and cater for the needs of these students.

A real case example was found in an Indian international school. Child A is highly above average in Math and performing decently in other areas apart from some social skills concerns. An intelligence test revealed a score of 130 (the cut-off point for gifted children for gifted education programme). Child A was taken seriously and subject acceleration was made possible for the first time in the school (based on a report made during consultation with the author). It was an excellent move, as Child A was given an educational match for a subject the child was excelling by far in comparison to peers. Child B, on the other hand, had already skipped a grade and doing well enough, but not excelling. However, child B has been very mischievous, gets black stars for behaviour, and is labelled as a “trouble-maker”. Teachers recognize that Child B is able to discuss issues at a different level but is never given due credit. Neither teachers nor the school counsellors were able to understand Child B’s behaviour. Child B has an IQ of 146, much higher than the child that was “recognized”. There are many such examples. This clearly shows the lack of understanding amongst teachers and schools about gifted children. Only children who show excellence in school subjects are considered having high ability, not the underachievers or the ones doing averagely. This can happen even in international schools, let alone public and local schools where “gifted children” (if the term is even accepted) are synonymous with high achievers, and only then recognized and given attention. The rest would just slip through and be left to fend for themselves, often feeling dejected.

Other misconceptions are common: such as assuming gifted children will become eminent adults; that one can learn and be trained to be gifted; that some children become gifted because their parents push them at an early age; and so on. Most importantly, especially for teachers, it is crucial to be aware that such a population exists in every school. Being ignorant and misguided about this special group would only push them further into the cracks of the education system.

Methods of Identification

There is no single method to accurately identify gifted children apart from an intelligence test. However, based on some form of objective assessment and by a combination of careful, systematic, and sensitive observation in the classroom, teachers will be able to build up a detailed picture of a student. From this, an objective judgement can be made.

However, various factors should be considered before making an assumption about a child's gifts. Because giftedness is dynamic and not static, identification needs to occur gradually over time, with multiple opportunities for the child to exhibit gifts. Identification should be inclusive: it should be ensured that there is no bias towards or against the disadvantaged, in terms of race, gender, culture or socioeconomic background, or even geographic location. It is best to employ a selection process that is flexible and continuous to allow time for recognition of gifts that may not stand out easily (especially in the talent domain). It is also important to have early identification in school as this clearly improves the likelihood that gifts will be nurtured and catered for.

Teachers may use information from various sources, which can help identify a student's strengths and gifts. These are available from:

- Parents' nomination especially for early giftedness (as teachers may have little information of the child).
- IQ tests (verbal and non-verbal; group/individual).
- Standardized tests (national assessments).
- School records, achievement tests (such as in reading, mathematics).
- Anecdotal records—Interviews (parent/child/previous teacher/school counsellor).
- Identification checklists and rating scales.
- Portfolios and performances (collected over time).
- Peer nomination and/or self-nomination.

Nominations (be it teacher, parent, peer or self-nomination), when used with systematically and with care, can contribute to the identification process. However, more objective methods, such as standardized tests of ability and achievement, can be of greater value in forming a basis for identification. Due to their objective nature, when used together with other data, identification can improve significantly. A combination of methods must be used, as it is possible that some students of high ability may not be achieving to their potential.

In short, it is crucial not to view gifted students as a homogeneous group. These students clearly vary in the range of gifts and talents they exhibit and in their emotional, social, and physical development.

Identifying Gifted Students Based on Their Profiles

Another very interesting method that can be employed in determining gifted students is by looking at their profiles and this can be done by teachers. Based on the definition of giftedness today, which looks at gifted students in a much broader perspective, determines that there are different types of gifted students, not only high achievers. Therefore, teachers could use a profile called 'The Profiles of the Gifted and Talented' developed by Betts and Neihart (1988). This profile was

developed after several years of observations, interviews, and reviews of literature, and enables teachers to understand the cognitive, emotional, and social needs of gifted students by looking closely at their feelings, behaviour, and needs. Gifted students are distinguished by six different profiles that describe and compare the needs, feelings, and behaviour of gifted children. The division of different types of gifted students enables one to see that gifted students come in various kinds, as opposed to the widely accepted stereotype gifted (the high-flyers and well-adjusted). This may be of help especially for teacher nomination, as teachers are apparently sensitive to multiple intelligences if they are exposed to a sufficient range of information about their students (Guskin et al. 1992). Hence, information on the types of gifted students that existed based on the profile would be able to help teachers nominate a wider range of students in the gifted circle, especially the atypically gifted.

The six types of giftedness are: *successful* (**Type 1**), the *challenging* (**Type 2**), the *underground* (**Type 3**), the *dropouts* (**Type 4**), the *double labelled* (**Type 5**) and the *autonomous learner* (**Type 6**). The summary of each of these is briefly discussed below.

The **Type 1's** are the most easily identifiable, and may account for up to about 90% of the identified gifted students in schools. They are the students who have learnt the system and are well-adjusted to society with a generally high self-image. They are obedient, display appropriate behaviour, and are high achievers, and therefore, are loved by parents and teachers. However, they can also get bored at school and learn the system fast enough so as to use the minimum effort to get by. They are also dependent on the system, thus less creative and imaginative, and lack autonomy.

The **Type 2's** are the divergently gifted, who possess high levels of creativity. They do not conform to the system and often have conflicts with teachers and parents. They get frustrated, as the school system does not recognize their abilities. They may be seen as disruptive in the classroom and often possess negative self-images, even though they are quite creative. This is the group of gifted students who are at risk of dropping out of schools for unhealthy activities, like getting involved in drugs or exhibiting delinquent behaviour.

Type 3 refers to gifted students who deny their talents or hide their giftedness in order to feel more included with a non-gifted peer group. They are generally middle school females, who are frequently insecure and anxious as their need to belong rise dramatically at that stage. Their changing needs often conflicts with the expectations of parents and teachers. These types appear to benefit from being accepted as they are at the time.

The **Type 4** gifted are the angry and frustrated students whose needs have not been recognized for many years and they feel rejected in the system. They express themselves by being depressed or withdrawn and responding defensively. They are identified very late; therefore, they are bitter and resentful due to feelings of neglect and have very low self-esteem. For these students, counselling is highly recommended.

Students identified as **Type 5** are gifted students who are physically or emotionally handicapped in some way, or have a learning disability. This group does not show behaviours of giftedness that can identify them in schools. They show signs of stress, frustration, rejection, helplessness, or isolation. They are also often impatient and critical with a low self-esteem. These students are easily ignored as they are seen as average. School systems seem to focus more on their weaknesses, and therefore fail to nurture their strengths. In a study by Lafrance (1994), teacher respondents showed an awareness of creative thinking characteristics in children who were gifted but were, however, unaware of creative thinking characteristics in children who were learning disabled. This shows that the **Type 5** gifted students are at risk of not being identified at all.

Finally, the **Type 6** gifted are the autonomous learners who have learnt to work effectively in the school system. Unlike **Type 1**, they do not work for the system, but rather make the system work for them. They are very successful, liked by parents, teachers and peers, and have a high self-image with some leadership capacity within their surroundings. They accept themselves and are risk takers, which goes well with their independent and self-directed nature. They are also able to express their feelings, goals, and needs freely and appropriately (Betts and Neihart 1988).

The reason for using this profile as a guideline to differentiate types of gifted students is to understand the different social and emotional needs of specified types in particular. This is very helpful for identification purposes. If teachers could use this profile as a guide when identifying gifted students in a classroom, they would probably not miss out the “at-risk” gifted, such as the challenging, the dropout, and the underground (Kaur 2000).

The profile should be given out to teachers prior to identification to allow for some time in understanding the diversity of this special population. It is encouraged that teachers should use it as a theoretical base to identify gifted students as a whole. The application of the approach will provide deeper and greater understanding of gifted students.

Awareness in India

As parents or educators for the very young, one may notice that some young children may have more advanced developmental milestones (such as, they may have sat, crawled, walked, earlier than age mates). They may speak early or when she or he spoke, it was in full, more sophisticated sentences that uses a larger vocabulary. They may be unusually curious, have long attention span, enjoy looking at books or being read to even before turning one. They may be extremely sensitive, to the extent of being bothered by textures or clothing or its labels, certain kind of foods, or other tactile sensitivities. Other traits could be a great sense of humour, vivid imagination, uncanny ability with puzzles, may have a facility with numbers, concerned with justice and fairness, and prefer older companions.

These are key traits of a young gifted child (although not exhaustive) that makes them distinctly different from the rest at a very young age (refer to Characteristics of the Gifted). If one compared a child with other children of the same age and found that most of the above is true, one may be dealing with a gifted child. But, is there any preparation to handle such a child? More importantly, is there any awareness? Only with awareness comes understanding and then one can be trained to help these special children.

In India, this group of children has been neglected for years and, to some extent, parents and teachers are responsible for this, due to lack of awareness. They have been left to fend for themselves as they are seen to be smarter than the rest so 'they will breeze through or manage on their own'. That only applies to the ones who are achieving academically. The ones who have learnt to hide their gifts or have never had their gifts recognized and nurtured would just slip between the cracks in the system.

The socio-economic environment in India is debilitating for the majority of gifted children who make do within the mediocre school system, which is largely ill-equipped to recognize these children, let alone nurture exceptional potential. Yet, some emerged in the previous generations such as tabla maestro Zakir Hussain and Maths prodigies S. Ramanujan and Shakuntala Devi, among others, and today, with more current names like Chandra Sekar Subramanian, Tathagat Avtar Tulsi, Sushma Verma, Budhia Singh, Akrit Jaiswal, and many more. These are names that are recognized, and therefore given the opportunities to shine. Unfortunately, these children were neither identified nor nurtured within the school system. These are just some names that probably made it by accident, rather than nurturance and therefore made headlines to glorify the children of India. What happens in ten to twenty years' time? Would they make it to the world headlines? Hopefully yes, but probably not. If between 2 and 5% of any given student population is believed to be gifted, imagine the number of brilliant children in India.

Gifted children differ from the average child in terms of their needs. Simply put, they are children who are performing beyond their chronological age. An example: Rishi, at 6 explains the differences between how helicopters and airplanes fly in a Show and Tell activity on transportation. At 4, Sara eagerly wants to help victims of a disaster in another country. Lisa, 5 gives up two boxes of her favourite toys to be distributed to underprivileged children in a shelter at Christmas. 5 year-old Amin asks in-depth questions about life and death. These are not common among children of those age groups.

The problem is magnified when these children are educationally treated at par with everyone else in the classroom. For instance, Arun, at 4 has mastered most kindergarten skills, especially reading, as he starts kindergarten. While his teacher teaches sounds and pronunciation, he is already reading grade level books. He becomes bored as it is repetitious; something gifted children get very frustrated with. He starts being disruptive and not paying attention to the teacher. He may do something else or disrupt other children in the classroom (to feed his hunger for knowledge or to get attention). The teacher gets annoyed, punishes him, calls the parents, and labels him a child with behavioural concerns. What do you think?

It is often assumed that children who are bright would love going to school as they enjoy learning. This is absolutely true; they do enjoy learning but only if learning matches their ability, only if learning stimulates and challenges them, and only if learning is meaningful to them. Rick at 7 years of age, hated school and kept complaining about feeling tired all the time. Due to the fact that he was able to learn so quickly and grasp concepts easily, he became bored with rote learning and repetition. It was a case of a bright mind in a dull classroom. This is when he became disruptive (usual with boys, due to high energy levels), started doodling in his work sheets, had verbal outbursts or just sank into his own world and refused to do what others were doing. Teachers accused him of being disobedient, stubborn, and spaced-out in class. This becomes a vicious cycle; and such kids will get labelled eventually. For teachers, if a child appears to be good in academics, she or he is expected to be good at everything else, an all-rounder. Unfortunately, this is not true for the case of gifted children; they are not advanced in every aspect.

It becomes harder when a child is gifted and at the same time, also has a disability (learning or physical), which is termed “twice exceptional” (refer to Some Misconceptions about Gifted Children). As discussed earlier, it is very possible to have a disability and still be gifted. Giftedness can be combined with certain learning disability such as central auditory processing disorder (CAPD), difficulties with visual processing, sensory processing disorder, spatial disorientation, dyslexia, and attention deficits. In most cases, their disability masks their ability and the focus is more often than not, on their weaknesses rather than their strengths.

As parents and teachers, we need to recognize these children, only then will we be able to advocate for them, get them the necessary help they require. In India, due to the lack of resources this may be hard, but not impossible. Parents and teachers need to be aware if the traits discussed above are seen in children. There are developmental advancements that can be observed in early childhood; but bear in mind that the child does not advance equally in all areas. A 6-year-old child who is able to explain aerodynamics to his peers may not even be able to hold a pencil well. Or a 7-year-old who talks about life and death may still may have a problem tying her shoelaces. It is apparent that the higher the child’s IQ, the harder it is for the child to conform to the lock-step school curriculum. The larger the gap between the child’s strengths in comparison with peers, the harder it would be for the child to fit in. Children like this fit in best with other children of a similar mental age group.

Parents, along with teachers, educators, and counsellors/psychologists, need to create an environment in which the gifted child is provided with opportunities that are best suited so their potential can be unleashed. Thus, parent advocacy is critical for gifted children’s emotional and academic development.

The Scenario in Schools

When schools and parents fail to identify and cater for the gifted, there is a risk of damaging individuals who may eventually be turned off by the rigid education they are forced to go through. This may cause some to burnout, opt out, and under-achieve to the extent of dropping out. Thus, it would be such a loss to society and the nation as these are the children who could easily add value to society through their exceptional abilities. Unfortunately, they would not even be recognized let alone nurtured.

Schools need to be aware that giftedness is not about a steady March in academic achievement through the top of the grade or exam scores. It should be noted that IQ scores do not automatically equate with achievement scores. When there is a clear discrepancy between IQ and achievement scores, the child needs to be given some attention, be it a gifted child or one with a learning disability.

In India, schools may neglect the needs of such students due to the lack of awareness and, in a lot of cases, due to pressure on limited resources in terms of finances, time, and trained staff. This has implication for educators. Gifted children in schools are exceptionally capable learners who progress in learning at a significantly faster pace in comparison with their peers, often resulting in high levels of achievement. Such children are found in all walks of life and all segments of society. From early childhood, their optimal development requires differentiated educational experiences. Just as the individualized educational programme (IEP) is required for children with learning concerns, gifted children who are at the other end of the continuum also required such programmes. For the gifted, differentiated educational experiences would need adjustments in the level, depth, and pacing of curriculum and enrichment programmes to match their current levels of achievement and learning pace.

Unfortunately, this is not the case in India due to the diverse spread of population and the disparity in education. Therefore, some of the gifted individuals with exceptional aptitude may not demonstrate outstanding levels of achievement due to environmental circumstances such as limited opportunities to learn as a result of poverty, discrimination, or cultural barriers; due to physical or learning disabilities; or due to motivational or emotional problems. Identification of these students will need to emphasize aptitude rather than relying only on demonstrated achievement. Such students will need challenging programmes and additional support services if they are to develop their ability and realize optimal levels of performance (The National Association for Gifted Children 2010).

Having said that, as mentioned earlier, it is fair to say that the existence of a gifted- programme stretches back to the 1960s and has progressed very slowly since. A quick view of the timeline for any initiative in education for the gifted is as follows:

- 1962: Jnana Prabodhini Prashala in Pune (Mensa India was established here in 1976)
- 1963: National Talent Search Examination (NTSE) introduced by NCERT

- 1986: Jawahar Navodaya Vidyalaya (JNV)—identifies and develop talented, bright and gifted children predominantly from rural areas
- 1994: Tribal Mensa Nurturing Programme
- 1998: Gifted Children Centre at Col. Satsangi's Kiran Memorial School (CSKMS) Delhi. Conducts research on giftedness and spreads awareness about the need to identify and nurture gifted children countrywide
- 1999: Kishore Vaigyanik Protsahan Yojana (KVPY)
- 2008: Innovation in Science Pursuit for Inspired Research (INSPIRE)
- 2013: National Association of Gifted Education India (NAGE-India) renamed PRODIGY—Promoting Development of India's Gifted Young (under the wing of National Institute of Advanced Studies (NIAS))

Partners: Delhi University and Agastya Foundation

As seen in the timeline of the development of some initiative for the gifted, there is some progress made in India over the recent years especially by Mensa India with the Tribal Mensa Nurturing Programme that aims to identify, nurture, and nourish giftedness among children from all castes, creeds, and social strata. It started in 1994 and has since expanded in many more tribal areas that are often neglected by the mainstream. Nevertheless, the age group for selection is 10–15 years, due to various reasons, but, as with any other special needs, giftedness should be identified and nurtured as early as possible, preferable in the elementary years.

At the national level, the National Institute of Advanced Studies (NIAS), under their Promoting the Development of India's Gifted Young programme (PRODIGY) established in January 2013, has attempted to develop a National program for identification and mentoring gifted children in science and mathematics (with Delhi University as their partner institute). Many other attempts are mainly made by private educational consultants which may not be accessible to most schools, especially government schools.

There have been a lot of debates about the importance of gifted education in India. However, real progress is yet to be seen. Most research in this area leads to more theories and recommendations but proper implementation of is still nowhere to be seen. It is very unfortunate that neither governments nor educationists have developed any formal programmes let alone a policy plan for nurturing this group of children in India. As one can see today in various marketing and promotional tools used by private and international schools, there is a lot of hype here claiming to have specialized programmes for the gifted population; however most are “half-baked wholesale versions of Western models”. And with the diversity of the gifted population within a country alone, these programmes may not suit the needs or cater to the development of gifted children, not forgetting the effect of untrained teachers trying to deal with gifted children and eventually leading to both parties getting frustrated.

The importance of teacher training is crucial in recognizing gifted children. A good example was a few training sessions done by the author for a few public

schools. Firstly, it was a clear eye opener for teachers, and teachers appreciated the knowledge of being aware that such children exist and that it was not very difficult to recognize them. Secondly, at the end of the session, there was hands-on work whereby, the next day teachers were asked to present their assignment, which was to recognize and identify if there were any such children in their classroom. They were to indicate the characteristics of the students they suspected might be gifted. It was a real eye-opener and somewhat emotional, because some of the children identified had been actually labelled negatively till then. Teachers became quite emotional and sensitized to the fact that we, as educators, need to recognize the diversity of children in the classroom and not to merely label them. This shows a lack of awareness and ignorance amongst teachers in India which may cause a loss of the brightest minds.

Nevertheless, it is a good sign that a few people have started talking about gifted education in India, but when awareness is inadequate, parents unaware, and teachers untrained, the nation is missing out on an overwhelming number of gifted children who need help and have slipped away due to focus on certain subjects (namely the sciences), age group, identification methods, lack of expertise, lack of guidance, and the like. Since teachers are the main contact with students, it is crucial that every teacher should be educated at the very basic level on gifted education and recognizing gifted children to start the spread of awareness. This is only possible with nationwide teacher training.

Curriculum for the Gifted: An Overview

There are some academic challenges that are suitable for the gifted. It should be built on the unique characteristics, interests, and needs of this targeted group. Most importantly, it should be differentiated and individualized to meet the needs of the gifted.

Differentiation refers to the preparation that is made for the curriculum to respond to the characteristic needs of gifted learners (for instance, allowing for a faster pace of learning, and choosing themes and content that allow for more complex investigation). In short, differentiation allows for acceleration, complexity, depth, challenge, and creativity. Individualization is the process of adapting that curriculum to the needs and interests of a particular gifted learner (for example, compacting).

With the basis of differentiation, and individualized curriculum, schools can meet the academic challenges required for gifted students with a number of other programmes. Acceleration is important to enable these students to learn at their own pace. Students can be accelerated across the year or within subjects.

Curriculum compacting, especially in mainstream schools, has been proven to work well for gifted students. This is a system designed to adapt the regular curriculum to meet the needs of gifted students by eliminating work that has been previously mastered and streamline it at a pace that matches the student's abilities. The rationale for using this method is because students experience repetition of content each year and know much of the regular curriculum content before actually

learning it. In addition, the quality of textbooks does not drastically improved over the years. Compacting enables differentiation to occur and provides educational accountability for students by allowing modification of the pace of instruction and practice time.

Other effective methods that can be used are enrichment programmes outside school hours that enables students to learn beyond grade level material; mentoring/ cross age tutoring where matching younger or older students with similar interests/abilities to enhance learning of both is done; independent negotiated programmes where students' interest and skills determine the scale and scope of the project and are negotiated with the staff, regarding resources, and so on. There are also mentorships, summer and Saturday programmes, and competitions, as well as gifted resource services (associations, support groups, and the like).

In an interview with NEA Today, in 1999, Howard Gardner (director of Project Zero at the Harvard Graduate School of Education, who introduced the theory of multiple intelligences in 1983) said: "I don't care what intelligence people have. I care whether they can do things we value in our culture. What good is it to know if you have an IQ of 90 or 130 ... if, in the end you can't do anything?"¹ Therefore, if there are gifted children out there, it must be made sure that they get the chance to do something fabulous simply because they are able to with some guide and nurturance".

Concluding Note

The only way to get the ball rolling in a nation-wide attempt to identify gifted students in a regular classroom is to train teachers to identify them. In the Indian classroom scenario today, teachers still find it hard to accept students, other than the high-achievers, as potentially gifted.

In fact, teachers may feel threatened by the challenging behaviours of some of these students. Their reaction to these students may well be negative, for example to discourage questions being asked, especially with the gifted students who are also creative. In fact, this is a common problem of gifted students, not only in India, but also in other cultures where teachers regard gifted students in classrooms as a threat. This may eventually lead to frustration and the gifted children would gradually withdraw into a world of their own.

When across the world there has been heightened awareness about the importance of providing special education to gifted children, India should not lag behind or give it any less importance. It is not very difficult to understand and nurture the gifted, nor is it hard to train teachers to help this population in every way possible. All that is required is some basic awareness, which would lead to some level of understanding of

¹H. Gardner, 'Interview with Howard Gardner,' NEA Today Online, March 1999. <http://www.nea.org/neatoday/9903/gardner.html>.

who they are and what they need. Once teachers are able to understand these, they would also be able to look for ways and means to support their needs.

Having said that, understanding the gifted, and making provisions for their needs continues to be a challenge for the vast majority of people. It would be even better if universities and colleges have a course that simply introduces gifted education for teachers-to-be as the first step of a nationwide awareness campaign. Every small step counts in a nation where the gifted have very little help. If the gifted population is better understood, it would surely be easier to get them the resources they need to grow, develop, thrive, and be an asset to the entire nation.

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Chapter 14

Exploring Pedagogy from a Human Rights Perspective



Sandeep Kumar

Introduction

Understanding Human Rights in Pedagogy

A human rights perspective in the teaching-learning processes deals with, basically, three aspects: *about* human rights, *for* human rights and *how* to implement it in pedagogy.

The major objective of a human rights perspective in pedagogy is to facilitate learners' understanding of human rights, learning to value human rights, and most importantly, taking responsibility for respecting, defending, and promoting human rights understanding. Tarrow (1987) states that an important outcome of the human rights perspective in pedagogy is empowerment, a process through which the learner, at present, and people and communities, in the future, increase their control of their own lives and the decisions that affect them. The ultimate goal of a human rights perspective in pedagogy is to incorporate space for enabling people to work together to foster human rights, justice, and dignity for all.

Tarrow (1987) professes that human rights education will allow people to be humane, and help them understand the inherent dignity of all individuals, and their rights. The basic principles of human rights comprise: universality; indivisibility; increasing participation in decision-making; and peaceful resolution of conflicts, respecting the various kinds of diversities (ethnic, regional, national, and so on). Ray (1994) says that a human-rights-perspective based teaching-learning process helps learners internalize the importance of human rights, integrating them into the way they live. These human rights, values and attitudes include "strengthening respect for human and fundamental freedoms" (Universal Declaration of Human

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Rights, Article 30.2), nurturing respect for others, self-esteem while understanding the nature of human dignity, and respecting the dignity of others. Graves (1984) stated that including a human rights perspective in the teaching–learning process will provide better opportunities to learners in understanding the fundamental aspects associated with human rights: development, peace, and democratization. It facilitates understanding that development is a comprehensive economic, social, cultural, and political process, which aims at the constant improvement of the well-being of the entire population and of all individuals, on the basis of their active, free, and meaningful participation in development.

Starkey (1991) posits that there are serious obstacles to development, as well as to the complete fulfilment of human beings and of peoples, through the denial of civil, political, economic, social, and cultural rights. However, considering that all human rights and fundamental freedoms are indivisible and interdependent, equal attention and consideration should be given to the implementation, promotion, and protection of civil, political, economic, social, and cultural rights. It is very challenging to promote an understanding of a teaching–learning processes based on human rights. According to Barker (1992) a human-rights-perspective based teaching will help learners to understand that peace is not the absence of war or violence, but the presence of peace of mind. Moreover, human rights education is “directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms”. While promoting “understanding, tolerance and friendship among all nations, racial or religious groups [...] it also promotes the activities of the United Nations for the maintenance of peace” (Universal Declaration of Human Rights, Article 26).

Human Rights Education as a Human Right and as Pedagogy

Students of law and international relations, or political science, may study human rights in a university setting, but most people receive no education, formally or informally, in human rights. Even human rights activists, usually, acquire their knowledge and skills by self-teaching and direct experience. When we say, “I’ve got my rights,” we usually think of those civil and political rights as defined in the Indian constitution. They include freedom to assemble, freedom of worship, and the right to a fair trial, and so on. However, social, economic, and cultural rights, such as health care, housing, or a living wage, also constitute human rights. Reardon (1995) states that people who do not know their rights are more vulnerable to having them abused and, often, lack the language and conceptual framework to effectively advocate them. There is a growing consensus recognizing the significance of education for and about human rights in building a free, just, and peaceful society.

Frankel (1989) states that learning about one’s human rights is integral to the human rights perspective as well as learning about the responsibilities that accompany all rights. Just as human rights belong to both individuals and society as

a whole, the responsibility to respect, defend, and promote human rights is both individual and collective. The Preamble of the UDHR (Universal Declaration of Human Rights) for example, calls not only on governments to promote human rights, but, also, on “every individual and every organ of society.” Human rights education provides the knowledge and awareness needed to meet this responsibility. Selby (1988), said that the responsibilities of all citizens in a democratic society are inseparable from the responsibility to promote human rights. The active participation of individuals is critical to both democracy and the human rights perspective. Learning the skills of advocacy—to speak and act every day in the name of human rights and, if pedagogy permits, to work with a human rights perspective—is the cornerstone of a human rights education.

Starkey (1991) clarifies that it is essential to understand that human rights is not a subject that can be studied at a distance. Students should not just learn about the Universal Declaration, about racial injustice, or about homelessness without being challenged to think about what it means to them personally. Teachers must ask their students and themselves: “How does all this relate to the way we live our lives?” The answers to this question will tell us a great deal, about how effectively we have taught our students; consequently, every aspect of a good teaching–learning process needs to be based on a human rights perspective.

Smith (1988) states that favouring an *open minded examination* of human rights concerns, with opportunities for participants to arrive at positions different from those of the facilitator. This includes an *international/global dimension* to the human rights theme being examined, (for example, how it manifests itself both at home and outside). He elaborates that emphasis should be on human rights as a *positive value system* affirming the belief that the *individual* can make a difference and provides examples of individuals who have done so. A facilitator is required to link every potential topic or issue to relevant articles of the *universal declaration of human rights*. He/she should make this connection explicit, rather than implicit, or assumed. There is a need to be responsive to concerns related to *cultural diversity, content and learning process*. Use of *participatory methods* for learning, such as role play, discussion, debates, mock trials, games, and simulations are more effective, than simply lecturing, connecting people’s *lived experience* directly with abstract concepts and legal documents.

This section of the theoretical framework is concerned with methodologies based on a human rights perspective, which are tied to various educational goals and objectives. Cassese’s (1990) professional literature, on educational program development, stresses that the first step in the planning of teaching and curricular activities requires the sorting out of ends, objectives, and means. Some educational goals, bearing on human rights, can be derived directly from the international human rights instruments. Some goals are driven by a framework of social needs (such as empowerment) and long term projects (such as development and democracy programs). Methodologies should be linked to: (1) understanding the international human rights instruments, essentially based on the right to know our rights; (2) curriculum planning; (3) efforts to promote social empowerment; (4) responding to the goals of specific user groups; and (5) program and participant

evaluation. Of course, these five goals necessarily overlap, but are differentiated for the purposes of presenting examples of discrete methods used to attain the goals. In the context of education, a human-rights-perspective based pedagogy can pursue many different pedagogical objectives. These include: (1) *attitudinal changes* (2) *value clarification* (3) *cognitive skills* (4) *the development of solidarity attitudes* and, (5) *participatory education for empowerment*. The objectives, and the means used to attain them, will differ in relation to the target group involved: grade school children in primary schools; adults in a literacy program; peasant farmers involved in subsistence agriculture; police and military units; government officials and bureaucrats; health professionals involved in a program of continuing education, and so on. According to Donnelly (1993) if we have a right to know our rights, then we must start by learning about applicable international norms. We can do this in many ways, through interaction with people and through the format and locus of education, whether formal, non-formal, or informal. Through all of these sources and educational formats, we acquire some understanding of human rights, their benefits increasing exponentially if developed on a human rights perspective.

Methodology

In the study discussed in this chapter, the researcher studied pedagogy in its natural settings, attempting to make sense of, and to interpret, phenomena with reference to human rights. Qualitative research is intended to penetrate to the deeper significances of the research topic being researched. It involves an interpretive, naturalistic approach to the subject matter, and gives priority to what the data contributes to important research questions or existing information. This understanding forms the theoretical framework of the research discussed in this chapter. A human rights perspective has been understood and analyzed with reference to pedagogy and classroom practices.

Observation is used as a tool for data collection in this study. The observations for pedagogy and classroom practices were restricted to a single Government school in Delhi and, in total, 20 classes of social science were observed i.e. four observations for each class (four observations for Class 6 and the same for classes 7, 8, 9, and 10) and were conducted only in social science classes. The collected data is analyzed according to themes which emerged from the collected data.

Analysis of Pedagogy and Classroom Practices

The efforts to understand school education are not completed until classroom practices and pedagogic processes are studied. For this purpose, an analysis of the classroom practices has been presented here. This analysis takes its conceptual understanding from the theoretical basis and has been presented to understand the

classroom practices from a human rights perspective. Classroom observation has been used for data collection for this analysis, and a thematic analysis is presented below.

The Students' Role in the Classroom Processes

In almost all the classes observed, there was hardly any role of the students, except just being present in the class and listening to the teacher. In more than half of the classes, the teachers just read the text book and asked some questions. (The questions asked by the teacher will be discussed separately, later). There were many classes where the teacher could have engaged learners effectively in the teaching-learning-process. But, it clearly seemed that the teacher believed that the students should be silent in the class and listen carefully to whatever the teacher talked about. In some classes, where the students asked many questions, they were clearly told not to ask so many questions; the reason was that the teacher had to complete the syllabus. Completing the syllabus entailed that, most of the time, the teacher just read the textbook, merely articulating his/her own understanding. In some classes, even this articulation of the teacher's point of view was missing, as she simply read the chapter at a stretch till it was completed. In such a situation, one cannot even imagine the active role of the students. The participation of students is essential to impart a human rights based perspective, which was clearly missing in the classes observed.

How Did the Teachers Deal with Sensitive Issues, Such as Caste, Class, Gender, and so on?

Since the classes observed were social science classes, it was very obvious that some sensitive and crucial issues would emerge. Some were critical, while others quite sensitive. It was found, in the analysis, that there were classes where issues were highlighted, but the teacher could not, or did not, deal adequately with them, showing his/her insensitivity. In some classes, the teacher taught in such a way that no crucial issues came up and, in others, such issues were ignored or suppressed by saying: "You ask too many questions." For convenience, the above analysis has been discussed in four categories:

- (a) ***The inadequacy of the teacher:*** In certain cases, the teacher failed to handle the situation and just ignored that situation. In class 6, for instance, while dealing with 'Understanding Diversity', there were some issues that could have been dealt with effectively by the teacher but were not accomplished effectively; such as when the differences and similarities among people were asked by students: "*Biharis are mostly rickshaw-wala and so poor*", said one student; another

student replied, “*No, that is not right*”; a third student said, in a low voice, “*oye chup bihari*” (shut up Bihari) and the teacher just ignored these remarks, rather than channelling the discussion towards a more positive, inclusive perspective.

- (b) ***The teacher taught in such a way that no issues came up and if they did, they were ignored and suppressed:*** The analysis showed that, sometimes, the teacher taught in such a way that no issues could be raised, no matter how important the topic was. For instance, while dealing with democratic rights, the teacher taught in a manner that no issue emerged from the discourse that could be discussed. In a multicultural nation like India, it is very important to provide space to the learners to discuss such issues, but he simply read the book repeatedly saying “Rights are the claims of a person towards the state.” The statement itself was so inexplicit that students could not understand it, and the one or two questions asked by students, were rejected by him saying, “You do not listen carefully in the class.” This reaction highlighted the general insensitivity of the teacher towards social issues. Similarly the chapter “The Indian Constitution” (Class 8) was taught by creating such a stifling atmosphere, that no student could ask anything “*aap sab log yeh chapter class 6th and 7th mein bhi pad chuke hai to yahan jyada samay lagane ki zaroorat nahi hai.*” (You have studied this chapter in classes 6 and 7, so there is no need to devote more time now). In fact, the teacher had begun the class by scolding them profusely, making the entire situation so unpleasant, that no question was asked by any student. Consequently, no discussion was held.

- (c) ***Lack of knowledge:*** It was observed that, in many cases, the teacher’s lack of knowledge and understanding was the reason that crucial concepts were not clarified. For instance, in Class 9, the concept of poverty was not dealt with adequately. Rural and Urban forms of poverty were discussed ambiguously, confusing the entire class. For instance, the teacher explained that poverty in cities is known as urban poverty and poverty in villages is known as rural poverty. But to the question asked by the students about which category villages in cities would come under, the teacher could first not reply, and then said it would come under the rural category, and moved on without listening to further queries. In certain places, the teacher’s inadequate knowledge enforced the students’ pre-conceived and popular notions. For instance, while teaching ‘Understanding Marginalization’, the teacher dealt with the concerned issues by saying that tribes did not want to be developed, they derailed trains, many died, they danced weirdly (*ajeeb sa*), they were not educated. Thus, very sensitive issues were dealt with very crudely and insensitively.

The chapter ‘Diversity and Discrimination’, taught in Class 6, consists of a number of issues such as gender disparity, caste-based discrimination, and so on. Gender, caste, and poverty were discussed very superficially. For instance, regarding gender, the teacher said that men and women constitute our society, but some discrimination exists. Some of it is relevant and some of it is not. What are these relevant forms of discrimination and how these forms are justified were not discussed. The teacher said that the Constitution considered all

persons (male, female) equal. Here, the teacher's idea seemed to be biased and seemed to be in favour of the existing inequalities between men and women. The teacher presented a very glorified picture of equality, instead of discussing cases of discrimination. The lesson demanded analysis of cases manifesting inequality while developing a critical understanding in the students.

- (d) **Misconceptions and Biased Views:** In certain cases, the teacher's own misconceptions and biased understanding became the cause of problematic teaching and insensitive responses in the teaching-learning process. For example, in Class 9, the poverty was presented as a cause of theft. The teacher added that poverty is one of the chief causes that steers people towards thievery. The students started associating poverty with theft and pointed to a poor student in class, while she remained silent during the interlude. These misconceptions when presented by the teachers, creates biases in the learner's mind while negating the human rights perspective. While teaching secularism in Class 8, on many occasions, the teacher made a similar mistake. For instance, he said Pakistan is not a secular state and therefore celebrates only Muslim festivals. The teacher was imparting his unquestioned understanding about secularism. He also tried to explain secularism from his own perspective, stating that he had a Muslim friend and they shared everything in life. A student asked, "Will you marry your daughter to his son?" The teacher said that marriage was a different issue. The attempt was successful in helping the students understand the meaning of secularism, and not what is acceptable as right and wrong by the general public.

While dealing with, 'Equality in the Indian Democracy', the teacher's opinion on issues of gender were extremely biased. This was apparent in the presentation of arguments such as not allowing girls to go out at night, which was justified as "*Jamana kharab hai*" (the world is not good), and favouring the division of work saying, "*Chahe mahila bahar kam kare par khaana aadmi to nahi paka sakti*" (women can work outside, but men cannot cook food); as to why parents prevent their children from talking to Muslims, she said that their parents may have had bad experiences with them.

Pedagogy and Activity

In the Classes 6–10th the only pedagogy that was used was reading the textbook. In some classes, questions were asked, but were answered very inadequately. The teachers read the textbook themselves or asked a student to read it, followed by an explanation, which again was fraught with problems (discussed extensively in the second theme of the analysis). There was only one class, out of the 20 classes observed, where the teacher asked the students to do some task, individually. It was Class 6 and the chapter titled 'What is Government' was being taught. The students were told to write the functions of a government from the book individually.

It could have been an effective class and activity, if they had been asked to discuss the functions of a government in groups and, then, share these ideas with the class. This is the only class where the students were asked to do something. Otherwise, the only role of the student in the class was to listen and ask questions, that too if permitted by the teacher. The classroom strategies employed were limited to reading aloud from the textbook while the students' participation was non-existent.

Context-Based Teaching-Learning, with Examples

The context is important to any subject, especially for a subject such as Social Sciences, which is directly related to the social context its epistemological beliefs are embedded in it. That is why contextualizing the teaching of Social Sciences becomes important. While analyzing observations, there were some categories that stood out in stark relief. **First**, where no concrete attempt was made to contextualise the concept to facilitate learning; **second**, where the teacher was able to create the context and **third**, where some kind of context was created with examples, but the interpretation of these examples made the learning process even more problematic. The classes dealt with very crucial concepts, such as 'Democracy and Challenges', 'Constitutional Design', 'Electoral Politics', 'The Indian Constitution', 'Key elements of a Democratic Government' and 'Federalism'. The teacher made no attempt to relate these concepts with real-life experiences, nor to simplify these concepts with the help of examples. An effective context-based teaching is possible with these concepts.

While teaching 'Understanding Marginalization', in Class 8, the teacher did not strive to give any examples or to create a context. The students' observations about their surroundings were dismissed with a cursory remark. For instance, when a student said that some 'Adivasis' lived near his house and their behavior was quite weird, the teacher agreed saying that they, indeed, behaved like that. This was a very disturbing statement expressed by the teacher and certainly against the understanding of a human rights perspective.

In Class 7, while teaching about equality in the Indian Democracy, the teacher asked some questions to contextualise the concept. For instance, what did equality mean? The students were, also, asked to cite some examples, where men and women were considered equal. These examples can strengthen conceptual understanding while contextualizing it. Her biased understanding (men cannot cook food, sending girls out at night is not safe as the time was not good, rules set by societies regarding men and women were right, and so on) created more problems in the class. Statements made by other teachers were also very problematic: that Muslims kill cows; that caste is important and we cannot survive without it; that men should not wash clothes; that boys play cricket and girls with dolls; and so on. A biased understanding disturbs the situational matrix of the classroom while negating the human rights perspective.

The Types of Questions Asked

The objective of questioning in a class is to understand the learner's perspective while building upon it and fostering effective learning. The nature of questions should be such, that they have the possibility of multiple responses. Unfortunately, this understanding was conspicuous by its absence in the classes. Most of the time, the teacher asked questions for formality. They were focused on recalling of memorized facts. There were very few questions developing the thinking process and hardly any question which provided space for critical and reflective thinking.

The analysis shows that, at certain places, students' understanding-based questions were not appreciated and immediately rejected. In one class, while teaching about the legislature and the executive in India, in Class 10, the teacher asked, "Who makes laws?" The students replied that the judiciary made laws. She suddenly responded, "*kya maine aisa kaha, kyun dhyan se nahi sunte ho*" (did I say anything like this, why do you not listen carefully). Later, in the discussion, the students got confused with the terms 'rules', 'laws', and 'justice'. After the teacher said that parliament made the laws and the judiciary did justice, the students were asked the role of the police. Another student wanted to ask something else, but she was stopped from discussing further. It was clear that the teacher was not aware of certain concepts and, thus dismissed the students' answers, expecting only a text-based answer. In the classes described above, the students' experiences and knowledge have no space in classroom practices. They are therefore far removed from a human rights perspective.

In certain contexts, the teacher could not effectively deal with the questions asked. For instance, while discussing electoral politics, the teachers questioned randomly, without collecting adequate responses. "*Chunavo ki zarurat kyun hoti hai?*" (What is the need for elections?) "*Kya aap jante hai 18 saal ke sabhi log mat daal sakte hai?*" (Do you know that people above the age of 18 can cast their vote?). But, both the questions were not dealt with adequately. For the second question, a student asked why the age was 18 and not 17 or 19. This query was dismissed with "*ye kya savaal hai, kyonki samvidhan mein likha hai ye to.*" (What type of question is this? because it is written in the constitution!). Even the question raised by another student, "*kya chunavi pratidwandita achhi baat hai?*" (Is electoral competition a healthy process?), she, again, showed her lack of understanding of the concept and said it was a problem in the system. These responses ruined the understanding of the electoral process suggesting that elections are important, but not '*praitidwandita*' (competition). Most of the time, the responses given by the teacher in response to his/her own questions were quite declarative, with no scope for debate and discussion. The questions that were answered were presented as the ultimate truth and the debatable questions were answered declaratively, as if nothing existed beyond what the teacher said. The questions asked were inexplicit, recall-based, and not planned.

Teacher-Centred and Teacher-Fronted Classes

Most of the classes were teacher-centred, with the teachers deciding the whole teaching learning process, from the content to the method, including what was right and what was wrong. There was hardly any scope in class for student-initiated activity or discussion. It has been accepted in educational discourse that child-centred education is an effective mode of imparting education and is based on a human rights perspective. While teaching the chapter titled ‘Growing up as boys and girls’, in Class 7, the teacher was the sole transmitter of knowledge and facts while teaching was neglected. At one point, she asked the learners to stop asking anything, because there was a lot to discuss and the time was insufficient. The students’ understanding and their experiences were not included or respected. The only participation by the learners, was to ask some questions, now and again. The classroom practices described were not based on acceptable and laudable principles of education.

The Teachers’ Engagement with the Class

Most of the times, the teachers’ engagement with the class was superficial, with the sole objective of completing the chapter, and without any focus on student comprehension. In Class 8, for the topic ‘Understanding Secularism’, the teacher was in a hurry to just complete the chapter, stating that there was nothing new in this chapter and said that “*ghuma fira kar wahi batein kahi gai hai secularism ko lekar*” (the same things have been said about secularism, as has already been discussed). The teacher, to hide his/her own inability, at times, spent time reprimanding students. In Class 9, while teaching ‘Constitutional design’, the teacher’s engagement was very superficial; when she did not get an answer from the students, she said, “*tum log dhyanse nahi sunte ho, ye to bahut asan prashan hai*” (you do not listen carefully, this is very easy), “*I cannot help you people now, khud padhlana baad main, main agay padhati hu.*” (I cannot help you people now, read later yourself, I am teaching further) moving on to the next chapter. The engagement of the teachers, in the above cases, was extremely superficial. Whether students comprehended anything was not a matter of concern for them. Where was the human rights perspective in these classes?’ is a question the teacher needs to answer.

The Students’ Perspective Towards the Teachers

It was observed that many students were not happy at the end of the class. They used to grumble “*uff jaan bachi*” (oh we are safe) (Class 10), “*is teacher ko kuch nahi aata*” (this teacher knows nothing) (Class 9). Many other responses such as

these were very normal after the classes, which shows that the students did not think very highly of their teachers, nor held them in high esteem. These observations make it clear that the teacher was hardly concerned about the students' learning and had no concern for the students' knowledge and understanding in the class. The general statements of the teachers—such as, “you cannot do anything”, “This is very simple, you can't tell me even this much”, and so on—indicated their negative attitude. The teachers' lack of knowledge was also a reason why students did not respect them. Here, respect has many connotations such as, respect associated with the teachers' knowledge, respect associated with the students' dignity in the class, respect associated with the students' acceptance in the class, and so on. In all the classes, generally, it was observed that the students did not respect the teachers.

Teaching, Learning and Examination

Teaching, learning, and examinations have a close relationship in our education system. The situation worsens when the entire teaching-learning process becomes examination-centred. On many occasions during observation, similar issues emerged. The teachers were merely teaching robotically with no concern for the students' comprehension; the sole concern was the examination. In Class 9, the teacher said, “*hum kitaab ka first part chhod sakte hai kyonki usme Africa ke bare mein likha hai to hum log page 48 se shuru karte hai.*” (We can skip the first part of the chapter, as it talks more about Africa; we can start from page 48). The questions were focused on recalling memorized facts without any kind of critical and reflective process. Similarly, in Class 8, the topic ‘The Indian Constitution’ was taught by omitting pages and questions which the teacher felt would not appear in their exam. There was no space given to the learners, their knowledge, and their experiences.

Moreover, teaching-learning was never contextualized; the classes were just based on the textbooks, as a medium for preparing for the examinations. A significant observation was regarding the classroom practices in Class 6, while teaching ‘Key Elements of a Democratic Government’. It was evident that the examination was the clear focus of the class. The teacher said that there was no need to prepare questions from the chapter, since in the examination no question ever came from this chapter even though what the chapter dealt with was the working of a democracy. The chapter was completed in 20 min, during which the meaning of participation in a democracy, and the status of South Africans, and an egalitarian picture of present day India was presented. The discussion was not a complete account, only a half-truth, of discrimination in South Africa and India. The focus of teaching was examination-oriented with no scope for critical or reflective thinking.

How the Teachers Decided What Was Right and What Was Wrong, with Reference to Certain Debatable Issues

It is very obvious that, in the Social Science classes, there are debates about social issues. It is critical to understand how the teacher provides space for such debates in the classroom and channelizes the discussion in the right direction, while providing suitable feedback. A very meaningful discussion could have been undertaken in Class 10, when a student wanted to discuss the definition of democracy given by the teacher “*Janta ka janta ke dwara or janta ke liye shaasan*” (by the people, of the people and for the people). He asked that since we do not rule and even do not make rules then how is our nation democratic? Instead of taking this point ahead for discussion, the teacher simply dismissed the question by saying “*chup karo, what do you want, to sit in the Parliament to make rules*” (shut up, what do you want, to sit in the Parliament to make rules). Again, the student tried to ask, but the teacher interrupted and said, “if you will listen carefully, then you will not ask so many questions. We cannot waste the entire class to explain democracy. *baad mein puchh lena*” (ask later).

The teacher is the arbitrator of right and wrong. In Class 9, while talking about political parties, she openly favoured the Congress party and said, “*Congress aaj bharat ki sabse badi or achhi party hai, usne vikas ke kitne kaam karwaye hai, metro etc.*” (Congress is the biggest and the best party of India, has done a lot of work for development for example, metro, and so on) and talked very disparagingly about other parties. It was clearly evident that the teacher was favouring the Congress party, an inappropriate stance for any teacher to take. Another controversial issue came up for discussion in Class 9 (Democratic Rights) with reference to why women did not have any say in the decision-making process at home, even though they were earning and contributing to the family income. The teacher could have discussed economic equality and decision-making effectively, but did not.

Student’s Status or Dignity in the Class

The students’ status, here, refers to how students are treated in class: Do they get proper respect or not? Is their understanding respected or not? Is their socio-cultural and economic status respected and accepted? It is essential for a teacher to give due respect to the students in class, in general, and while teaching, in particular. But, unfortunately, hardly any class was found where the students were accepted or respected. Most of the time, statements such as “*you do not know even this much*”, “*tum kuch nahi kar sakte*” (you cannot do anything), “*itne asaan sawaal ka jawab bhi nahi aata*”, (do you not know the answer to this very simple question) “*sabke*

sab fail ho jaoge” (all of you will fail), “*tumhe kuch pata to hota nahi hai bas prashan puchhte ho*” (you do not know anything and just ask questions) were common in all the classes observed. Such statements undermine the student’s ability, and are a clear rejection of his/her existence and dignity.

A clear rejection of the students’ dignity could be seen in Class 9, in one case. While teaching poverty, a question was asked by the teacher as to what was the difference between a car driver and a rickshaw driver? A student said that, “*Sir, Naresh batayega, iske papa rickshaw chalate hai*” (Naresh could tell, his father drives a rickshaw). Naresh replied, “*oye, chup kar pitega kya.*” (Shut up, do you want to get beaten). The teacher shouted at both of them, but asked Naresh to explain to the class about the life of a rickshaw driver. Naresh stood up, but could not speak (feeling humiliated) and the students quietly laughed at him. In a rude voice, the teacher said that he should not have asked him, as he knew that Naresh would not be able to answer. Thus, the students’ identity and respect in class was completely undermined.

Feedback to the Learners

Feedback is important for any teaching-learning process. Providing healthy feedback makes the teaching-learning process more effective and interesting for the students. Feedback may be in any form, such as answers to the questions asked by the students, a general discussion-based feedback and so on. Unfortunately, feedback in the observed classes was very problematic and very biased, as the pre-conceived notions of the teachers would set the tone of the discussion. In Class 9, electoral politics was discussed but the feedback given by the teacher was quite inadequate. The following responses will prove this inadequacy, with regard to elections: “*aj kal kitni dikkat aati hai chunavo main. Pratidwandita ke kaaran logo ka shoshan hota hai. To ye aj ek samsaya hai*” (there are many problems in holding elections these days. Because of competition, people get exploited. This has become a problem); and “All persons above the age of 18 are eligible to vote only because it is written in the Constitution (no substantial reasons were given by the teacher, except citing the Constitution)”. These kinds of responses prevent developing learners’ understanding of human rights and democratic principles. Feedback regarding the migration of tribes, and gender equality, was also inadequate (as has already been discussed in the analysis). *Godhara* and *Valmiki Basti* incidents, the problem of education in Delhi, reservation, and so on, were not given the relevance they deserved in the context of socio-political issues.

The Teachers' Faith and the Attitude Towards the Student's Potentialities and Capabilities

Although no single definition can be given of a good teacher or teaching, it can be said that it is good for a teacher to have faith in the learners' potentialities and capabilities. This not only motivates the learners, but gives them ownership of their learning, developing the student's faith in the teacher. But, in most classes observed, nothing like this could be seen. The teacher, clearly, showed that she had no faith in the learners' abilities; everything was just prescribed to them and hardly any space was given to active learning. The teacher judged the student good, only if he replied correctly (a correct answer meant that which was prescribed by the teacher or the textbook) to the question, otherwise the teacher did not miss any opportunity to abuse the learners with negative epithets: "*sab fail ho jaoge*" (you all will fail); "*tumhe kuch nahi aata*" (you do not know anything); "*mujhe tumse puchna hi nahi chahiye tha*" (I should not have asked you); "*tumhe kuch pata toh hota nahi hai bas prashan karte ho, shaant raho*" (you do not know anything and just ask questions, keep quiet); and so on. Most classes were prescriptive, where the teacher transmitted information and knowledge, without active participation by the students. Almost all the classes were teacher-centred, with no space for students' questions, responses, and experiences, proving that teachers had no faith or belief in the learners' abilities, potentialities, and capabilities.

The Meaning of Discipline and Respect in Class

This particular theme emerged because discipline in the class was observed, specifically, in two ways. First, all the students had to stand up and wish the teacher, when the teacher entered the class; and second, the students were to remain quiet in the class, without asking any questions. It was clearly observed in the classes, that the more questions the students asked, the more rudely the teacher behaved. Many examples have already been given, when the teacher reacted negatively on being asked a question in the class. It was disheartening to observe a teacher scolding an entire class, when they forgot to stand up when the teacher entered the class. The teacher said: "*tum logo ko pata nahi ki jab teacher class mein aate hai toh 'class stand' kehker khade hote hai, sab ke sab nalayak ho tum log*" (Don't you know that you all should stand up when a teacher enters the class? You all are fools!). These statements were really problematic since the focus was on maintaining the respect of the teacher while ignoring that of the student.

The Teachers' Preconceived Notions

The pre-conceived notions of the teacher, regarding the social system and its problem areas, are of concern from the human rights perspective. Many preconceived notions were strongly favoured by the teachers such as gender-based discrimination, existence of caste, reservation as a problem, non-existence of untouchability. Statements such as “Some kind of discrimination is required for the smooth functioning of society” merely demonstrate the narrow understanding of secularism (examples have already been discussed in the earlier themes) creating a non-human rights perspective-based classroom environment.

Space for Collaborative, Critical and Reflective Thinking

Collaborative work is important in Social Science classes, where the students can learn through each other's perspectives, helping them to develop the ability and understanding to respect other's views and perspectives. The classroom practices observed were far-removed from this basic tenet. Space for critical and reflective thinking or discussion on even debatable issues was absolutely non-existent. More often than not, the teacher presented information and the students just listened to them. It was the teacher's point of view which was the ultimate truth in the class. In such a claustrophobic classroom environment, reflecting about criticism on the existing practices, while fostering a human-rights-perspective based teaching-learning process is an unattainable mecca.

Summing up

The above analysis has highlighted certain issues and debates. It was observed that the classes were, by and large, teacher-centred, with no scope for a context-based, teaching-learning. Sensitive issues were dealt with very insensitively, revealing the teachers' inability and lack of knowledge. The teachers' understanding was biased, creating problems for the students, alienating them from the teaching learning process, and making them negative in their attitudes towards education. The classroom practices were examination-oriented with the focus on recall-based oral and written questions. It was clearly visible that teachers did not have faith in their learners' abilities, adopting the prescriptive teaching of content. Moreover, there was no space for reflective and critical thinking. The teachers strongly believed that there was hardly any role for the students in the teaching-learning process. The

analysis and discussion clearly indicate that the teachers' understanding of Human Rights was limited and their teaching lacked this perspective.

Conclusion: The Way Ahead

A human-rights-perspective based pedagogy can be defined as imparting education, training, and information building a universal culture of human rights. The sharing of knowledge, imparting of skills and moulding of attitudes, coupled with fostering respect for human being, promotes understanding and acceptance amongst diverse groups, enabling all persons to participate effectively in a free and democratic society. The human rights perspective facilitates inculcating responsibility in every member to work towards making human rights a reality, in each community. It is in this context each school has to undertake the responsibility of providing an equitable opportunity to all their students for their holistic development, aligned with this perspective.

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Chapter 15

Researching in Multilingual Settings: The Dilemma of the Mother Tongue



Shilpy Raaj

Introduction

The vision of voice unites two kinds of freedom: freedom from denial of opportunity due to something linguistic; and freedom for satisfaction in the use of language. In other words: freedom to have one's voice heard, and freedom to develop a voice worth hearing. One way to think of the society in which one would like to live is to think of the kinds of voices it would have. (Hymes 1996, 46)

Education is an institution that organizes learning by bringing together teachers and learners in a given space. Learning, or the process of transferring knowledge and/or competences, is a communicative activity, involving verbal and non-verbal interaction between a teacher and students, as well as between students. This is where voice comes in. In plain words, voice is about who says what, in which way, to whom. Voices, in education and elsewhere, are always situated, socially determined, and institutionally organized. A point fairly easy to make, with respect to educational settings, is that teachers' voices are differently positioned and evaluated than pupils' voices. Other voices that make up the nexus of education include the principal's voice, the parents' voices, the politicians' voices, the curriculum designers' voices, the textbook writers' and publishers' voices. Thus, voice is first of all a sociolinguistic concept, that focuses our attention on the various agents within educational settings.

Voices are also ideological: they contain explicit or implicit ideas about language and social relations, or, in the case of educational discourses, about education and language in education, as well as about identity. Different stake holders in education have different invested interests so their voices show traces of their respective interactional and institutional positions. Within the study of educational voices, we

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cannot assume that the different actors are always consciously aware of their voice(s) and actively choose what sort of voice(s) they produce. According to Kulick, if educational research on voice is indeed occupied with the sort of discourses that are heard in a particular socio-cultural space, it should equally be occupied with the processes through which identifications and interests in the classroom are (un)authorized, (il) legitimate and (un)marked; thus with what gets left out.

As voice or voices provide the concrete material to work with, in qualitative studies of language and education—the actual or micro discourse to analyze—it is important to contextualize these voices with respect to macro issues of power and inequality. Blommaert says that it is precisely this ethnographic perspective that gives us “an awareness that discourse is contextualized in each phase of its existence, and that every act of discourse production, reproduction and consumption involves shifts in contexts” . Voice is that perspective, embedded deeply in ethnography, which offers a method to investigate educational discourses as an arena of (conflicting) contact between different actors, their identities, identifications, desires and interests.

Hornberger opines that voice therefore is an “analytical heuristic” for an empirically-based sociolinguistics, or linguistic anthropology, of education. Through studying voice, we can search in our data for instances of conflict, inequality, and power as well as resistance, creativity, and counter-hegemonic practices. Voice provides a tool for finding and dealing with alternative understandings of language, education, and society. Taking ordinary educational voices seriously has the potential to challenge our scholarly understandings of our research object and its subjects, and to renew our theoretical and conceptual apparatus.

Minority Voices and Language and Education Choices

Local and minority means of producing, knowing, and communicating, are often undervalued in the face of modern development schemes, universal systems of education, and languages of wider communication. From a distance, the temptation to generalize about a group of people is strong; to generalize about their thoughts and feelings, whether they have motivation for education, and how they feel about their own language and culture. As stereotypes are formed, and policy implications are drawn, based on assumptions about what others think or want, minority voices—the voices of rural people, of minority language speakers, of women, of the young—are often neglected. Unfortunately, schools have often been the transmitters of such messages of alienation, particularly for linguistic minorities for whom the language and literacy of the school are different from those of the home and community. Meanwhile, the education provided by schools is seen as a vehicle for upward socio-economic mobility, for escape from poverty and a life of deprivation. Schools also provide, to various degrees, access to the languages perceived as powerful and necessary for advancement; in the case of India, standard Hindi and English.

Research in the Indian context, as elsewhere, has shown that linguistic minorities are often disadvantaged in education systems that do not use their mother tongue as mediums of instruction. Jhingran describes various levels of disadvantage faced by linguistic minorities in India: “Based on Census data, some socio-linguistic surveys and interaction with education planners all over the country, it is felt that almost 25% of all primary school going children face a moderate to severe learning disadvantage owing to their language background” (2005, 3). While Jhingran and others see mother tongue education as an important tool for educational equity, problems include lack of effectively implemented models and apparent lack of community support. According to Jhingran, there is a need for “more in-depth information on language usage, proficiency and preferences” to inform decisions regarding educational interventions, as well as more research on second language acquisition in the Indian context (2005, 27). Appropriate language teaching techniques should help in bridging between languages in school settings.

The medium of instruction and the role of English in education have been debated in India since before independence. Phillipson and Skutnabb-Kangas argue that, despite concerns raised by Indian experts in recent decades, in the drive towards English, India is “throwing away its language resources”: “The consequence of current language policy is that many among the younger generations of Indians are being deprived of familiarity with their cultural heritage, and quite probably of an education that would enable them to contribute to the solution of Indian problems in the future”. Others such as Vaish emphasize, instead, the role of English as a tool in decolonization, and as “an empowering vocational skill in a globalizing economy.” This requires attention to the policy and pedagogy decisions that will “sustain the empowering role of English in today’s India” . In these debates, however, it is the urban and elite voices that are most often heard. English and English-medium education are in demand. At the same time, awareness of the educational needs of linguistic minorities has been growing in India.

For this reason, and for the sake of language maintenance, some NGOs and government initiatives are seeking to provide education using the mother tongue of linguistic minorities. In multilingual societies, schools are responsible for providing access to both languages of wider communication and to educational content. Research and policy, worldwide, address how these can be provided most effectively, and in the most empowering ways. Often, such research points to the need to be responsive to local contexts, providing education relevant to, and effective for, a particular population.

The importance of community involvement in decisions, not only about education but also about language teaching and maintenance, necessitates an understanding of local views. To educators and linguists, mother tongue education may seem like the most localized and empowering alternative, but, when given a choice, minorities often prefer the powerful languages, which are the means for access to better economic opportunities, as media of instruction in schools. Thus, initiatives that are intended to empower are sometimes considered to be barriers to

empowerment, resisted by the groups they were intended to serve. Similar examples could be given regarding decisions to continue or withdraw from education altogether, as well as which languages to learn and how. Broader development initiatives also, though intended for the common good, may look quite different from a local perspective.

In describing the ecological relationships among languages, Blackledge suggests that “further studies are required which critically analyse the complexity and diversity of the multilingual practices of children, young people and teachers in and out of educational settings, and of their attitudes, values and beliefs about language. Through such studies, we can come to a more comprehensive understanding of the complex relationship of languages to each other, to the speakers of those languages, and to the social structures in the society in which the languages are spoken”.

Valuing the Local: Minority Voices on Development, Education, and Language

Modern development schemes often ignore time-tested local technologies and means of production. Universal education assumptions, as well, tend to undervalue local ways of knowing and learning, leading to a shift away from the traditional and the local. Similarly, local languages seem to lose their significance beside languages of wider communication. Certainly, some change brings improvement. The problems arise when ideas about what brings improvement are assumed to be relevant for all people in any context. Decisions about what is best for a group of people are more likely to contribute to empowerment when they reflect the voices of the people. Differing ideologies about languages and multilingualism are reflected in discourses about the global spread of English, and widespread language loss; about languages to be learned and languages to be preserved.

The theme of valuing the local can be found in many strands of literature related to language, from different language ideologies and challenges to the construct of language itself, to bottom-up language planning and the importance of community involvement in language-maintenance and decisions about language instruction. According to Woolard, language ideologies have been defined as “[r]epresentations, whether explicit or implicit, that construe the intersection of language and human beings in a social world”. Ideas about language, Woolard says, can vary as much as the form of languages. Irvine and Gal provide a more specific definition of language ideology as: “the ideas with which participants and observers frame their understanding of linguistic varieties and map those understandings onto people, events, and activities that are significant to them” . The category of language ideology studies, concerning “contact between languages or language varieties”, is of most relevance to contemporary research. Similar to language ideologies,

Schiffman's "linguistic culture" encompasses the beliefs, attitudes, and myths of a group of people regarding language.

The dominant "one nation—one language" ideology carries assumptions about the normality of monolingualism within nation-states, an ideology spread around the world, in part, through colonisation. Similarly, the "diffusion of English" paradigm assumes the spread of English as the reasonable consequence and tool of modernization. This stands in contrast to the "ecology of language" paradigm, which emphasizes the valuable resource of multilingualism and the influence of languages on each other in their social contexts. According to Hornberger, current challenges to the 'one nation—one language' ideology have come through the influences both of globalization and ethnic fragmentation, opening up new opportunities for multilingualism.

In the Indian context, multilingualism has long been common, with children frequently learning and using multiple languages at an early age. However, changes caused by globalization and the spread of English may be a threat to traditional linguistic systems. In the words of Mohanty, the spread of English "has obliterated the traditional complementary relationship between languages and strong maintenance norms". Whether or not the spread of English constitutes linguistic imperialism, the fact that languages have an influence upon one another is clear. Bhatt refers to non-standard varieties of English when he discusses India's present-day "socio-linguistic apartheid" and the "ideology of standardization." He points out that we, too, often forget that the standard variety has its value only because of its market, and is without any intrinsic value greater than other varieties. This relates to the literature on World Englishes, acknowledging the growing number of native, non-native, and nativized varieties of English internationally.

Related to the invention of languages as distinct entities, according to some scholars, is the construction of the concept of "mother tongue." As Ramaswamy says: "The globalization of the nation form and its cultures of modernity enabled the universalization of the concept of language as 'mother tongue,' the site where culture becomes nature. The mother tongue is a construct that emerged at a particular historical moment in the complex transformation of Europe's linguistic landscape from the middle of the second millennium ...". This concept was then exported to the colonies. Mitchell describes the changing views of language in the nineteenth century in India: "By the end of the nineteenth century, practices relating to literacy, pedagogy, administration and bureaucracy, religion, economic exchange, and personal interaction—practices that once moved across multiple languages—began to be governed by the logic of parallel 'mother tongues'".

While, previously, different languages were used by the same educated individual to accomplish different tasks, languages began to be seen "as more separable, distinct, and most of all, parallel mediums". With this shift towards having all skills in one language rather than separately in several, there was more emphasis on grammar, and new recognition for linguistically-defined communities emerged. Still the concept of mother tongue is not always an alien construct, although certainly it has various meanings. It has been used for describing the attachment to one's own language, as in Fishman's ethnolinguistic consciousness. In McCarty's

description: “Mother tongue denotes a deep, abiding, even cord-like connection between language and identity. Native American discourses make frequent reference to these connections between language, community, place, and time”. According to Hastings, mother tongue is not necessarily the language spoken by the mother, but could be the “heritage mother tongue” or, as used in current Sanskrit revitalization efforts, “the language which is the mother of all languages of India”.

The consequences of language ideology for social and linguistic processes are many, including issues of language shift and maintenance, and language learning and teaching. Schiffman describes the influence, both overt and covert, of linguistic culture on language policy. In educational contexts, language ideologies influence which languages to teach and which to use for teaching, as well as classroom-level practices, and decisions about how language is taught and used. In planning for language use in schools, language is sometimes considered, in a ‘language as problem’ orientation, to be a barrier needing to be overcome; sometimes it is considered a “right” to be defended, or may be considered a ‘resource’ to be utilized, according to Ruiz. A ‘language as resource’ orientation acknowledges the potential for enhanced learning if the resources of the home languages of all students are used to facilitate learning.

Several other strands of literature are worth mentioning, in relation to valuing the local, the consequences of ideologies, and language and education decisions. These include issues of language planning, language shift, medium of instruction, and the connection between language and poverty. The importance of valuing local decisions in language planning is a theme that has emerged from the language planning literature. Tollefson describes centralized versus decentralized language planning, differentiated according to local initiative in planning and implementation, and the scope of intended outcomes. Kaplan uses the term ‘top-down’ to refer to planning that is government-defined for government purposes: the government decides what is best for everyone. On the other hand, ‘bottom-up’ planning springs from needs identified in the population, with the real needs of the population respected and minorities consulted, even though such policies may be implemented by the government.

Hornberger describes indigenous literacies as language planning from the bottom up, as a door of opportunity for the marginalized and means of empowerment, and as cultural expression and enrichment, noting however that “the task of valuing and incorporating a diversity of identities, languages, and cultures, whether in an individual, a program, a school, a community or a society, is a supremely challenging one”. Ricento and Hornberger describe the layers of language planning and policy from national to institutional to individual, where the grassroots beginnings of change occur. Here participatory action research and critical evaluation of practices can influence language use and learning from the micro level. This involves seeing actions at the micro level as language planning positions, and teachers and students as agents of language planning.

Attention to local voices in the area of language teaching, for example, involves the use of empowering, emancipatory teaching methods. Participatory approaches to language teaching that stand in opposition to traditional externally driven

approaches incorporate using and validating what students know and bring to the language classroom as well as focusing on the real, lived experiences of students. Attention to local needs in language instruction takes us back to the issue of the spread of English, a language that itself has many varieties. For English language teachers, this means acknowledging the validity of different varieties of English and the need for their students to navigate that diverse world.

Research related to the concepts of empowerment values the local realities and the views of local people and every attempt is made to conduct this research in ways that would build up and empower participants. What exactly it entails deserves careful consideration. It should ideally go beyond simply recording the words of locals to involving them in the research. Cameron et al. define empowering research as “research *on, for, and with*” participants. The first of their guiding principles for empowering research is the use of interactive methods, methods that acknowledge that subjects of research are people and not objects. Thus, with this theoretical background, a description of the research area is presented below.

A Description of the Research Area in Its Multi-ethnic and Multilingual Context

Kahalgaon was formerly known as Colgong during the British rule. It is a town and a municipality in Bhagalpur district in the state of Bihar, India named after Kohal Rishi, popularly said to be in the epic *The Mahabharata* as the father of the saint named Astravakra. It is about 30 km east of Bhagalpur, located at 25.27N, 87.22E, and has an average elevation of 16 m (52 ft). It is situated on the banks of the river Ganga. The Tomb of Mahmud Shah, the last independent king of erstwhile Bengal, who died here a few days after his army was defeated by Sher Shah, is located in Kahalgaon. SSV (Shankar Shah Vikramshila) college, which is a degree college. Kahalgaon was an education hub in the Middle Ages. It is located close to the Vikramaśīla University which was one of the two most important centres of Buddhist learning in India during the Pala dynasty, along with Nālandā University. In response to a supposed decline in the quality of scholarship at Nālandā, Vikramaśīla was established by King Dharmapala.

In the vicinity of the town, stands the thermal power project from the National Thermal Power Corporation (NTPC), known as Kahalgaon Super Thermal Power Project (KhSTPP) which is located at a distance of approximately 3 km. The arrival of world-class infrastructure, healthcare and education, which would have taken years to reach the area otherwise has been made possible by the establishment of NTPC in the town. Kahalgaon now enjoys the luxury of the best of these. Education has assumed special importance and the setup has created enough jobs and businesses around itself, leading to a confluence of different cultures and languages, such as Angika, Bhojpuri, Maithili, Magadhi, and Bengali. The townships of NTPC are wonderfully planned, with lush greenery. Apart from housing for employees, it

has parks, shopping complexes, clubhouses, a stadium, and transit-camps. Kahalgaon thus enjoys remarkable prosperity, in comparison to most other small towns in India.

As per the Census of India 2001, Kahalgaon has a population of 22,110. Males constitute 53% of the population and females 47%. Kahalgaon has an average literacy rate of 57%, lower than the national average of 59.5%: male literacy is 63% and female literacy is 50%. 17% of the population is under 6 years of age. (Population 291,823 as per census 2011.) Angika is the local dialect and is spoken by the majority. It is an Indo-Iranian language of the Anga region of India, an approximately 58,000 km² area that falls within the contemporary states of Bihar, Jharkhand, and West Bengal. Hindi, Urdu, and English are also spoken by different sections of the population. Besides India, Angika is also spoken in the Terai region of Nepal. It belongs to the Eastern Indo-Aryan subgroup, which also includes Bengali, Assamese, and Odia.

The native people of Kahalgaon associate themselves with Angika to produce and access culture in their own language, the language which they consider to be of particular significance to their identity. It is this language with which these groups identify themselves and around which their group identity is constructed. It is a language which all individuals understand and is used to access knowledge and as a means of communication. The association individuals have with the language, either in terms of communication or comprehension, plays a vital role in constructing their identity by enabling them to use their mother tongue as an invaluable cultural capital and linguistic resource.

History of Angika

Angika is considered to be one of the oldest languages of the world. The evidence of the oldest forms of written Hindi literatures are available in Saraha's Angika poetry of 800 A.D. according to Pundit Rahul Sankritiyayan. The first poet of Hindi literature, Saraha, was also the first poet of Angika Language and literature. Pundit Rahul Sankritiyayan has given the name Angika to the language of 'Ang' region which was previously known as Chhika-Chhiki, Aangi, Surjapuri, Angikar, Chheka-Chhiki, Chhai-Chhow, Bhagalpuri, Chekari, Gayle-Gayli and Thethi.

Angika is a language of the Eastern Indo-Aryan language family, closely related to languages such as Bhojpuri, Bajjika, Maithili, and Magahi. It was classified by George A. Grierson as "Chhika-Chhiki". It has an affinity to the Eastern Indo-Aryan languages, such as Bengali, Oriya and Assamese. Although it has an ancient history of being an independent language, named 'Aangi', it had been traditionally classified as a "Bihari Language", which includes Angika, Bhojpuri, Magahi, Maithili and Vajjika. The name 'Angika' first appeared in the 1961 census.

It was erroneously classified as a dialect of Maithili by George A. Grierson in the 1928 Linguistic Survey of India. Angika is not listed in the 8th schedule of the constitution of India, although Angika language movements have advocated its

inclusion, and a submitted request is currently pending with the Government. As per 2001 Census, Angika is spoken by more than 30 million people in India, and around 50 million worldwide, as many Angika speakers have migrated to the Persian Gulf, the United Kingdom, the United States, Canada and other countries. Moreover, substantial numbers of the Angika-speaking population have settled elsewhere in India, mainly in Mumbai, Delhi, Kolkata, Baroda, Surat, Chandigarh, Ludhiana, Jamshedpur and Bokaro.

Angika is written in the Devanagari script; although the Anga Lipi and Kaithi scripts were used historically. Among the notable scholars who have contributed towards Angika literature are Suman Soorow, Ashwini, Naresh Pandey 'Chakore', Permanand Pandey, Vidyabhushan Venu, Amrendra, Khushilal Manjar, Vimal Vidrohi, Ram Sharma Anal, Gorelal Manishi, Abhaykant Choudhary, Umesh Jee, Bahadur Mishra, Kundan Amitabh and Chandraprakash Jagpriya. A number of literary books are also available in Angika language. Furthermore, Angika is taught at post-graduation level at Tilka Manjhi Bhagalpur University.

Research Design

Advocating mother tongue based multilingual education in the primary grades, the study began with preliminary research where the main objective was to collect information on the status of the languages used in the community, primarily the regional language Angika—listed as a vulnerable language by UNESCO and a threatened language by Ethnologue (Ethnologue: Languages of the World is an annual reference publication in print and online that provides statistics and other information on the living languages of the world.)—the first language, Hindi (L1), and the second language, English (L2). 24 language teachers and approximately 1450 learners of primary classes (1–5) of ten government schools of Kahalgaon under the SSA were included in the study.

Language Use Survey was used with the teachers to explore their linguistic environment, where the focus was on eliciting information on literacy skills in their mother tongue/local language, and the ways in which the mother tongue/local language is used in the community. Literacy Attitudes Survey was conducted with the teachers to explore their attitudes towards mother tongue/local language literacy and national/official language literacy. The survey helped to collect information on the availability of literature in the mother tongue/local language and to identify the issues, themes, and topics that interest the teachers to aid material production in the mother tongue/local language.

Teacher Questionnaires were used to explore the community and commercial uses of literacy in the mother tongue/local language. The questionnaires provided important information about the educational uses of literacy in the mother tongue/local language, vis-à-vis the availability of written material in the mother tongue/local language. Informal Discussions with the teachers focused on the importance of mother tongue education in the primary grades. Classroom Observations were

used to elicit information about the teaching-learning pedagogy in the schools, Oral Tasks and Role Play to assess the linguistic level of the learners in their mother tongue and the languages of instruction, Hindi and English.

Research Findings

The mother tongue emerged as the preferred medium of communication with parents, siblings, people at the market and, sometimes, with colleagues at school (mostly used during informal talks and discussions), the reason being that people felt a sense of cultural affiliation and belongingness with their mother tongue. The mother tongue was seldom used with children and learners at school as there was a preference for the dominant languages of instruction/majority languages/standard languages, Hindi and English.

The interviewed teachers mostly use Hindi for communicating with their children at home and the learners at school, as all of them have a basic level of proficiency in the language, unlike English in which they have a low level of proficiency. Also, according to both the teachers and the learners, proficiency in Hindi and English would ensure a secure future in terms of career prospects and employability, hence there was a preference for the standard form of the languages Hindi and English. Moreover, the textbooks are written in standard Hindi and English, so there is an emphasis on learning the standard form of the language, especially in schools, as it a formal institution, although the communicative approach should be used for teaching languages.

The mother tongue has the status of being a 'home language'; to be used for communication with grandparents and/or for informal purposes only, which explains the reason for the neglect of children's mother tongues in schools, and a preference for Hindi and English. Hindi, and not the mother tongue/local language, was the preferred language of communication with strangers, when the interviewees were not sure whether the other person is fluent in their mother tongue/local language. The teachers were proficient in their mother tongue (which in a majority of cases is also the local language, Angika), both in the spoken and the written varieties. They learnt the spoken variety from their parents/grandparents during childhood.

The interviewed teachers believed that it is important to know how to read and write in the mother tongue/local language to maintain the vitality of the language, to communicate with the previous generations (parents/grandparents) and to have a better understanding of one's culture, customs, and traditions. Also, it helps in the development of confidence and a strong sense of identity with one's own language. In the words of the teachers, the mother tongue of children should be used in the initial stages of schooling as this would enable them to make a smooth transition from the home to the school environment where they would not feel alienated on the grounds of language. Moreover, their home languages would be given due respect in the classrooms so that they can use their 'own language' as an invaluable

resource. They would be able to express themselves better, and actively participate in the teaching-learning process, thereby making learning a fun-filled and easy process.

According to the teachers, the learners were most fluent and comfortable speaking in their mother tongue, Angika. When the mother tongue was used for interaction, there was an initial hesitation among the learners in participating in classroom activities. But, when the teacher continued to speak in their language, there was enthusiastic participation with a sense of pride and belongingness from them. They performed better in tasks and activities, such as, singing, role play, dramatization, discussions, simulating real life situations, sharing experience stories, pair work, and group work that were in their mother tongues, compared to Hindi and English. They acquired it in informal settings such as home and the market. They could definitely read in their mother tongue if teaching-learning materials were made available.

Teachers felt that children should speak in their mother tongue/local language when they enter school to ensure increased participation from them in the teaching-learning process as they would be able to express themselves freely and with confidence in their home languages. They would, thus, learn to respect their own language, culture, history, customs, and traditions, and the space given to their language in the schools would make them believe that their language is in no way inferior to the dominant languages of instruction.

Children are often ashamed to speak in their mother tongue in schools as they feel that the dominant languages of instruction are the languages of power, prestige, and empowerment, and that their mother tongue is a 'different' language that does not have the same status as the languages of instruction in schools and outside. They and their parents believe that the dominant languages of instruction would ensure better career opportunities, job prospects, and social mobility. There are attitudes of shame and guilt associated with the home language, as most of the children were not forthcoming in accepting the fact that their home language 'differs' from the standard languages taught in schools. They feel that their mother tongue should be used only for communication in informal settings (mostly in homes and while communicating with their peers) whereas, in formal settings, standard languages should be used.

Teachers opined that children should not give up their mother tongue/local language as that would mean the loss of their culture, customs, and traditions, in short, their identities. In any case, they speak Hindi and English in schools, as these are the languages of instruction in schools and higher education and jobs. Further, the importance of mother tongue for 'meaning-making' in the initial stages of a child's life cannot be denied. The interviewed teachers believed that the mother tongue/local language is dying because of the hegemonic status of some languages over the others; that is, Hindi and English being given more importance than the mother tongue/regional languages. This should not happen and every language should be duly respected, especially the home languages as the loss of languages would mean the loss of cultures associated with them. The importance of home languages and the rich culture associated with them is diminishing. This has to be

stopped by encouraging the study of these languages in schools and other formal institutions.

In the debate on the medium of instruction in schools, the teachers held the view that the needs and future aspirations of the learners should be kept in mind while taking a stand on the language issue. Together with this, the context of language learning should also be taken into consideration. Although the teachers believed that, to promote the learners' language and culture, and to ensure retention of children in the primary classes, the mother tongue should be used as the medium of instruction in the early years of schooling, they also pointed to the fact that, in the present times, the importance of English and Hindi could not be overlooked. In their opinion, all languages are important and they should be given due weightage in the curriculum as per the objectives of language learning at different age and cognitive level of the learners.

According to the teachers, most of the learners leave school even before completing primary education, as they have to earn for their family or they find the school curriculum too heavy. To ensure that these children stay in schools, they should be taught in a way that is easy for them to understand. Since language is an important factor in the schooling of a child, the mother tongue can be used for such children. But for children who move beyond the primary stage, the knowledge of Hindi and English is compulsory. The choice between reading and writing in the mother tongue/local language or Hindi/English would depend on the needs and interest of the learners, their age and their cognitive level as the objectives at different age and different levels of language learning are different. Since all the languages are important, there should be a harmonious coexistence of languages and the language issue should not be an either/or question.

Although all the teachers agree that the mother tongue of the children should be used at the primary level of schooling, they believe that, at higher levels, Hindi and English should be given importance. According to them, the proficiency of the learners in different languages at different levels of schooling is also important while making a choice between the mother tongue/local language or Hindi or English. The teachers believed that the initial age of language learning is crucial for the child where the child can learn and grasp more languages better. The home language of the child is extremely important at this stage, as the child makes meanings of the world around through this language. But, at a higher stage, to succeed in the 'outside world' a sound knowledge of Hindi and/English is important.

According to the interviewed teachers, if the children stopped using Hindi/English and used only the mother tongue/local language for speaking, reading, and writing, it would help in preserving the culture and identity of the community. But though the teachers felt that these children might be successful at the initial stage, they thought that when these children moved to higher education and started searching for jobs, they were most likely to face hardships which might pose serious problems, especially if they move to other parts of the country. This would hamper the social mobility of the community, which would hinder their progress and upliftment. Hence, the importance of different languages could not be negated.

The teachers encouraged the idea of writing about mother tongue/local language speakers' life and customs in books, as that would bring the learners close to their culture, custom, traditions, and identity. All the teachers expressed a keen desire about teaching such books. According to the teachers, the learners' culture, customs, and traditions are important. They could bring their personal narratives, life histories, everyday experiences, and folk culture in the classroom, where their language acts as cultural capital in which they can take pride.

The findings of the preliminary research enabled the researcher to gain a holistic understanding of the multilingual context of the research area, vis-à-vis the mother tongue/local language (Angika) which was subsequently used as a cultural and linguistic resource for the development of other languages (Hindi and English). Assessment of learners' linguistic proficiency in Angika, Hindi, and English, and an analysis of their language textbooks, facilitated the development of teaching-learning materials in Angika and English, to help the development of grammatical concepts in the lower primary classes (2 and 3) and language progression in the upper primary classe (4 and 5).

Implications for the Language Curriculum

The study has provided considerable insight into the functional reality of a multilingual classroom where the indigenous mother tongue (Angika) as cultural capital of the learners complements the learning of English; both the languages do not cancel each other out but flourish in each other's company. Different pointers for effective curriculum implications in a multilingual classroom are given below:

Activities for Enhancing Understanding of Learning Styles

In order to develop an understanding of the uses and limitations of learning styles, teachers should:

- Analyze existing instruction as it draws on various learning styles.
- Experience instructional variability in their own learning.
- Develop the capacity to design and implement instruction that appeals to a wide array of learning styles.
- Develop a habit of mind that prizes instructional variability.

While some educators, for example, Dunn et al. argue for the matching of learning style and instructional style, others—Irvine and York and Shaw advocate that teachers appeal to a diversity of learning styles by regularly engaging in variability of instruction.

Activities for Enhancing Understanding of Interaction Styles

Teachers can learn about interaction styles through a combination of direct and indirect means. A direct, first hand approach to learning about cultural styles of interaction, and how they might be used in instruction is through ethnographic inquiry. Moll and Diaz, and others describe their uses of qualitative research to manage the twin tasks of stimulating both instructional change in the education of children and conceptual change in the sensibilities of teacher education students. Reference to the work of such social theorists of learning as Vygotsky should prove helpful in these analyses.

Activities for Enhancing Understanding of Cultural Content

Pre-service interns can learn one kind of cultural content—the interests, issues, and concerns of students’ families and communities—by conducting ethnographic inquiry, and interacting with students and their families. In the teacher education classroom, they can then explore ways of making this content the focal point of instruction, drawing on ideas from the work of other teacher-researchers, according to Lipka,, Rison and Wigginton.

More formal cultural content derives from knowledge of the contributions of women and the contributions of minorities to history, literature, mathematics, science, and other fields. Using Banks’ approaches for integrating multicultural content into the curriculum, teachers might develop culturally responsible units of instruction. To facilitate decision making regarding content, teachers might be asked, as they are with less formal cultural content, to consider the ways in which culturally relevant content can be used to teach high-level thinking skills.

Activities for Enhancing Understanding of Appropriate Assessment

Just as instruction should use the learners’ cultural backgrounds as tools, so should assessment. Cummins opines that the teacher should function as the students’ advocate, seeking assessment strategies that reveal what learners know, rather than simply diagnosing what they do not know. Alternative assessment strategies might include oral interviews, skill demonstrations, portfolios of a student’s work over time, observation records, and student exhibits.

Through the use of ethnographic inquiry in communities and classrooms, teachers can develop sensitivity regarding the cultural congruence of various approaches to assessment. They also should develop competencies in devising and administering assessment measures and in interpreting the data yielded by such

measures. These competencies come not only from hearing about alternative assessment but also from experiencing it in teacher education coursework.

A variety of activities and assignments for the teacher education classroom facilitates teachers' understanding of and ability to use the cultural tools of language, learning style, interaction style, and cultural content. These tools also are used to create culturally responsible curricula, instruction, and assessment.

- Teachers should understand that language, learning style, interaction style, and cultural content are cultural capital that learners bring to the classroom.
- Teachers should stress the importance of constructing instruction that builds on the learner's cultural capital.
- Teachers should develop activities, assignments and culturally congruent instruction and assessment for the classroom to build on their learner's cultural capital.

For classes 1–3, locally relevant curriculum and instructional materials should focus on building a strong foundation in speaking, listening, reading and writing, and developing academic concepts in the mother tongue, based in local culture. The National Curriculum Framework 2005 (NCF) can be used as a guide to curriculum content and teaching methods in the case of India. To develop curriculum, and for materials and training workshops, mother tongue teachers and resource persons from the language group should be identified and they should work together with the linguists and NGOs, MLE specialists, and consultants.

Conclusion

Any curricular reform ought to take into consideration the fact that whatever appears relevant and essential today may not be suitable for tomorrow. Curriculum in countries such as India bases itself on the diverse characteristics of the nation with its multiplicities. As Clark remarks, a curriculum addresses the common as well as the individual aspirations.

Given the diverse and conflicting values that exist within any large social group, and given a democratic concern for the valuing of such diversity, it would seem necessary for any contemporary curriculum to attempt to embody what are agreed to be common aspirations, and yet leave space for individual interpretation within and beyond these, to accord with the individual characteristics of each teaching and learning context.

To enable the learners to connect with real-life situations, goals for a comprehensive language curriculum needs to bring aspects of language, culture, and practices of people into the learning process, in accordance with the local needs and concerns. A national curriculum (in language education) should aim for:

... a cohesive curricular policy based on guiding principles for language teaching and acquisition, which allows for a variety of implementations suitable to local needs and resources, and which provides illustrative models for use. (Position Paper on Teaching of English NCERT—2005 p. 3)

In teacher training in contexts, such as Kahalgaon, Jhingran emphasizes awareness of language attitudes as one of the primary needs: “to ensure that the children’s first language is not derided as an inferior language”. He, secondly, emphasizes the need for training in appropriate teaching methods for second language acquisition. Such training could build on existing local knowledge, about the importance of place or environment, in language learning and the importance of understanding. While the importance of place may imply language immersion, the importance of understanding brings balance, with a broader concern for student learning in a safe environment that values the resources of the students’ backgrounds. Thus, teachers who already use Angika as a language support for students, need not feel ashamed of this practice. Rather, they could be encouraged to do so through trainings that include the social and pedagogical rationale for supporting the home language in school.

At the policy level, the importance of valuing diversity relates to the macro-versus-micro lens and the importance of considering carefully the local implications of policies. For pedagogy, this implies the use of students’ multiple language resources in the classroom, with encouragement and training in these multilingual classroom practices rather than criticism. This, along with challenges to notions of backwardness and the oral-literate divide, implies attention to attitudes towards languages and communities. The identification with multiple linguistic varieties and theories about the invention of language also imply the importance of adaptation of language policies to diverse contexts and acknowledgement at the national level of local diversity. At the classroom level, this implies, again, the collaborative use and acknowledgement of multiple linguistic and cultural resources.

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Part IV
Voices from the Field

Chapter 16

Rivers and Fireworks: Social Constructivism in Education



Anita S. Charles

Rivers and Fireworks: Social Constructivism in Education

My first teaching job, fresh out of college in the mid-80s, was as a first grade (Class 1) teacher in the heart of the inner city of Jersey City, New Jersey, USA, in a small Catholic-run elementary school just a stone's throw across the river from the twin towers of New York. My teacher preparation program at an Ivy League liberal arts college had focused exclusively on working with secondary school students, and my upbringing had been in a small rural town in the middle of the state of Maine. I knew nothing of this environment. Replacing a teacher who had walked off the job in mid-November, I had stepped into a classroom filled with thirty-three active six-year-olds, almost entirely African-American and Hispanic, with a plastic crucifix of Jesus hanging crookedly against the blackboard. I knew I was in way over my head. What did I know about six-year-old children or their cultural realities, or about living in a big city, or about Catholicism as a faith, or even about teaching first graders who didn't know how to read? I had no idea what to do with these children. What I actually realized, on that very first day of my very first real job, was that I needed to take a giant step backward and ask myself a few tough questions. In particular, I needed to ask, "What do I believe about teaching and learning, and how do those beliefs impact my actions in this classroom?" I devoted long hours, well into the evenings, poring over first grade (Class 1) textbooks for reading and math, building hands-on material to encourage interaction, and learning about the lived realities of these children's circumstances. During class sessions with these energetic youngsters, I often scribbled notes to myself on scraps of paper that I would tuck in my pocket, to consider later when I would sit down to write in my diary at night. My students grew accustomed to waiting while I jotted down a

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turn of phrase they might use, or a dialectical way of speaking, or a question or idea I had about pedagogy. I became meta-aware, conscious of my consciousness, hyper-focused on each moment as if frozen in time and space. I was aware of every action and thought, in a strange new place where I tried to hook the newness onto what I already knew or believed, simultaneously trying to take what I thought I knew and hold it up to the light to re-examine.

I was swimming in a river I didn't recognize, flailing my arms furiously to stay afloat, in a current pulling me into the swirling energy of these lives. The river of these children's realities, was, on the one hand, filled with urban poverty and racial tensions, and, on the other, with rich relationships with extended family, with vibrant song and dance, and childlike wonder and resilience. For two years, I came to love these children by floating in their river as their teacher, and by allowing them to teach me.

Later in my career, as I returned to my rural roots and to teaching high school English, the image of the 'river' would become for me a metaphor of the socio-cultural approach to education, a theoretical framework first described by Vygotsky (1978).

Exploring Our Beliefs

To be a teacher takes courage, but also humility, self-awareness, and a career-long willingness to embark on a journey with no clear end goal. A teacher needs to begin by asking, and keep asking every single day of their career, "What do I believe about teaching and learning, and how do those beliefs impact my actions in this classroom?" This question matters because, regardless of whether or not a teacher is able to explicitly articulate a philosophy of teaching and learning, our actions reflect our values and ideologies. It matters because our beliefs get communicated to children in our classrooms as part of the hidden, and the not-so-hidden, curriculum (Ebert II et al. 2013). It matters because our belief system fuels our ability as teachers to assist every child to aim for his/her potential as a thinker, doer, dreamer, and feeler. If you are a teacher, ask yourself these questions every day: "What do I believe about teaching and learning?"; and "How do those beliefs influence what I do in my classroom?"

The first question teachers should ask themselves is: "Do I believe that all children can learn?" *All* children. The poor, the rich; boys and girls; those with disabilities and those with special gifts; children from every faith, and economic class structure, and colour and caste; *All*. This question challenges us to identify our hidden biases about certain subgroups of children, such as those with disabilities or of a certain background. If we answer "no," then we must next ask "Who is less capable, in my eyes, of being able to learn and grow in a classroom setting?" We need to reframe our lens to allow those children into the learning, by imagining them to be equally capable as their peers of stretching and growing.

If a teacher responds “yes” to this question of whether *all* children can learn—as I hope that anyone reading this chapter would—then the next question is: “But what does it *mean* to believe this? How does (or might) that belief *manifest* itself in my classroom?” And still, one more difficult question to confront: “What aspects of my classroom, of my actions, of my words *might not reflect this belief* that all children can learn?” Let’s contemplate those questions for one moment before moving on: (a) What does it mean to believe that all children can learn? Does it mean that I, as a teacher, am obligated (or can we say “privileged”) to have them in my classroom? Can I learn from them? Are there children whom I do not yet believe are capable of academic growth and potential?; (b) What aspects of my classroom might need to be altered to reflect a belief that all children can learn? Do I need to act differently? Set my classroom up in different ways? Try different strategies? Offer different options?

Let’s move on. Next, ask yourself these questions: Do I believe that ...

- Intelligence can be measured?
- Children learn best sitting quietly at desks?
- Seats should be arranged in rows?
- The teacher with the knowledge should stand at the front of the room?

These bulleted beliefs reflect a traditional transmission mode of teaching (Johnson 2010), also referred to disparagingly by the renowned Brazilian philosopher Paulo Freire as the “banking model” of education (Micheletti 2010). In this model, the teacher appears to be doing the active work of teaching, filling the students up, like an empty vessel or a blank slate. But this model is limited by its lack of acknowledgement of the learner’s active—and necessary—engagement in his or her learning, and, further, of the teacher’s active construction of new knowledge in relation to the learner’s. That is, this transmission model obscures the vibrant interconnections and metaphorical fireworks happening in genuine and growth-filled learning environments (Rodriguez 2012).

In contrast, a teacher might explore his/her belief system by asking: Do I believe instead that ...

- Children with all types of differences can learn?
- All children have both challenges/needs and gifts/strengths?
- Many social, cultural, and personal factors impact learning?
- The teacher and students construct knowledge together?
- The teacher learns from his/her students?

These beliefs are in alignment with a social constructivist model of education, and it is this model that this chapter explores in detail.

Sociocultural Theory

Sociocultural theory, a broad ideology based heavily on Vygotsky (1978) work and expanded upon by others, is based on the belief that learning is a result of our social

and cultural influences and processes. This theory stresses the interdependence of the individual and society, such as societally-regulated activities. Our society and culture tell individuals how to act, what to wear, what to eat, how to speak, what is expected of them in the future, and much more. Schools, as social institutions, are sites that regulate individual actions and development. Schools are microcosms of society, sending explicit as well as hidden messages to students about who they are, who their families and histories are, and who they can, might, or will become (Minick et al. 1993). In short, this theory gives

careful attention to the institutional context of social interaction. Culturally specific institutions, such as schools, homes, and libraries, systematically structure the interactions that occur between people, or between people and cultural artefacts, such as books or computers. One cannot develop a viable sociocultural conception of human development without looking carefully at the way these institutions develop, the way they are linked with one another, and the way human social life is organized within them (Minick et al. 1993, 6).

In light of the downplaying of the role of individual agency in sociocultural perspectives, some theorists have reframed Vygotsky's work as "activity theory," accounting more fully for individual choice or movement within the larger social and cultural structures (Thorne 2005). In other words, individuals are never solely slaves of socio cultural-historical influences; they also have decisions they make within and among those influences. Some people have wider access to resources and to a broader array of choices they can make, whereas others are more limited in what they have and can do. However, every individual takes individual action against the backdrop of social and cultural realities.

To use my own metaphor of the river, every human being swims in a contextualized river controlled by factors that are social, cultural, religious, historical, and political. This metaphor helps to illustrate that we are largely at the whim of these forces that carry us downstream; that we reach out and grab those 'resources' (people, things, institutions, events, circumstances) that our particular rivers provide; and that it is difficult (though not impossible) to jump from the banks into other rivers. Within that river, we do have a choice and free will: we can float with the current, swim against it, head for the shores, try to get out of it entirely, and more, all while the pressures of the current carry us onward. If we are supported by the 'river', we float along quite happily, knowing that we will be carried toward a secure future. If, however, we struggle to stay afloat in that river, we expend more energy simply to keep ourselves moving. We might find ourselves aching to see beyond the banks of our river, or reaching out for life-support that is not there for us. We might decide to give up, feeling overwhelmed by circumstances.

This theory provides us with a framework for understanding the process of teaching and learning; we can reflect on our own past educational influences and our beliefs about learning. Remember those questions we asked about our beliefs and ideology? Our answers are largely framed by our own 'rivers' that we ourselves have floated down, or, possibly (though less commonly), that we have fought against or leaped beyond. Furthermore, our culture and society influence the way we teach and learn. These two complementary points might seem obvious: we teach

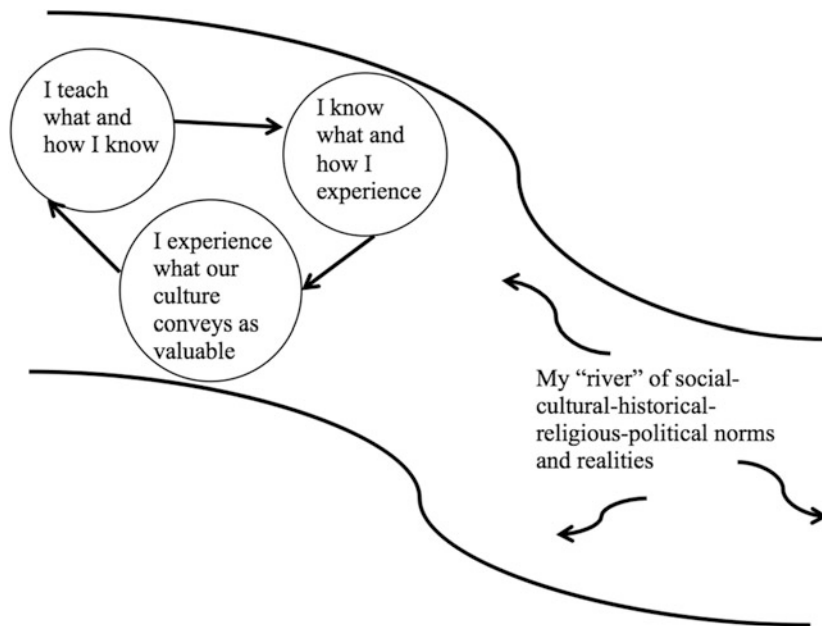


Fig. 16.1 Teaching within the river of sociocultural realities

what and how we know; we know what and how we experience; we experience what our culture believes to be important; consequently, we teach what and how we are led to believe is important. See Fig. 16.1.

Let's add a further complication to this model: We are not only influenced by the river we live in; we simultaneously influence that river! As we live within the norms—the riverbanks—abiding by the expectations of the river's flow, we also contribute to reinforcing that flow and those riverbanks, through our social, cultural, religious, and political actions that are embedded in that river. Surely, we might, at times, choose to align ourselves with movements or subgroups who aim to re-align the banks or the flow of the river, but, regardless, by living within a given set of norms, we replicate and reproduce those norms. So let's add the bolder arrows in the middle to convey that interaction. See Fig. 16.2.

Now, let's take that a step further: If teachers teach what (and how) they know, and they know what part of the river is theirs, then teachers are a vehicle of social reproduction for students: for future generations. We all, by the very nature of being alive, contribute to our river's norms; but teachers engage in publicly-approved actions that intend to convey information and beliefs to others. Schools, as institutions within the broader society, have the power to conserve and reproduce social realities, while also having the power to question or alter those realities. So now the model looks more like this (Fig. 16.3).

One important question in sociocultural theory is whether teachers might simultaneously learn from and be influenced by their students' 'rivers.' Can those

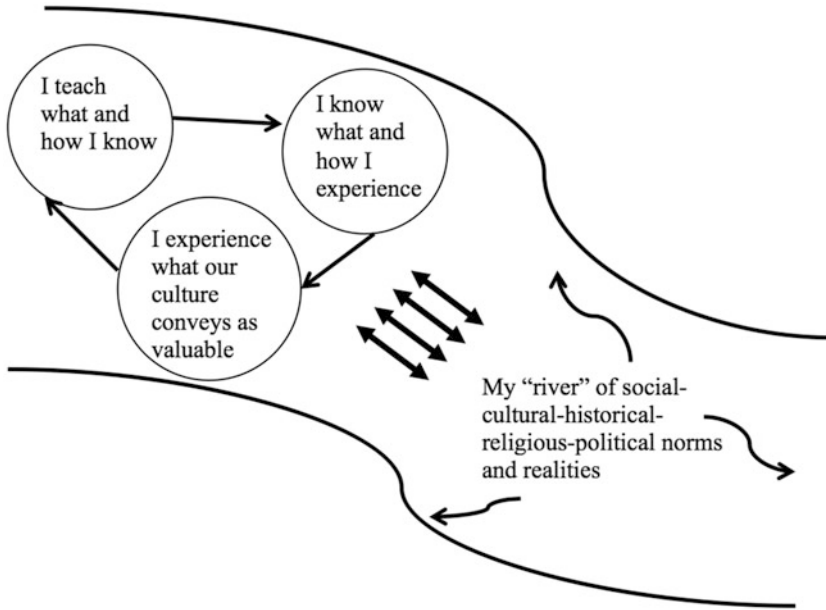


Fig. 16.2 Teaching and the river of sociocultural realities—multidirectional influence

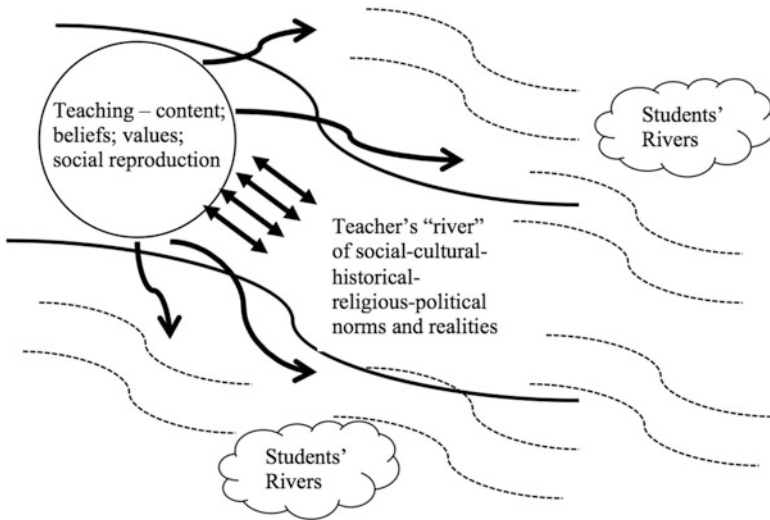


Fig. 16.3 Multiple rivers of sociocultural realities—teaching and learning

dark, wiggly arrows be multi-directional? I argue that the answer is, emphatically, ‘Yes!’ Given a sociocultural framework, schools involve “real people who develop a variety of interpersonal relationships with one another in the course of their shared activity in a given institutional context” (Minick et al. 1993, 6). These relationships influence learning, but also impact the ways in which we view and interact with the world.

But if we return to the first question—“What do I believe?”—we must explicitly deconstruct this preset conclusion, under a critically-informed sociocultural lens, while considering our own agency within those larger influences.

Such exploration begins with asking “How did I learn as a child? What worked well—or not—for me, and why? What access did I have—or not—to resources?” In other words, we need to open our eyes to the ‘river’ we swam in as students that helped us to ‘flow’ to the position of becoming a teacher. A child’s educational experience in India might be vastly different, based on the type of schooling attended, the location of that school (city/rural, north/south/east/west), the influences of parents and other family members, the influences of religion, caste, class, and gender, and of course, so much more. I could set up similar, though also different, factors for my own childhood education in the United States.

Moving beyond our personal exploration, however, we must also critically engage in the questions that disrupt our comfort zones: “Is my way the best way for my classroom of students? What rivers do my students inhabit and how might that knowledge influence my perceptions of them? What else might I need to learn or know in order to help every child succeed?”

Lastly, we must confront a set of questions—the toughest set of all in my opinion—that bring us even deeper into a critically-engaged pedagogy of social justice: “Whose realities and voices did I *not* hear as a student growing up in my river? Whose realities and voices are missing from my own classroom? And why are these voices missing?” For example, did your river embed a gendered view of history? Did it include people with disabilities or other differences? Did it permit a questioning of normative values that allowed for multiple viewpoints? (Nasir and Hand 2006). With a teacher’s eye toward these questions, they shift to become a part of our pedagogies, our explicit curriculum, the hidden curriculum, and the ‘null’ curriculum. The null curriculum implies that which is deliberately and/or unconsciously left out of the explicit, and even out of the hidden, curriculum (Ebert II et al. 2013). These exclusions are largely a result of power structures that permeate society and require close examination, unpacking, and disruption.

The Zone of Proximal Development

One key element of the sociocultural perspective is that of the Zone of Proximal Development (ZPD), defined by Vygotsky (1978) as “... the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (33). This zone is where all

teaching and learning takes place, between what a student already knows, and what the student cannot yet know or learn.

When I organize teacher workshops, I like to create an interactive visual to help describe the ZPD, and I will attempt to walk you through that exercise here.

1. Begin by placing your two hands in front of you, palms facing each other, one above the other and about 12 inches apart. You should look like you are holding an imaginary box by its top and bottom.
2. Look at your bottom hand and at the space below that hand. That space is your comfort zone; it is everything you already know in a given area. For example, it might be making a jelly sandwich (cooking know-how), or throwing a ball (sport ability), or multiplying numbers up to the 12s (math knowledge). You already have learned it at some point in the past and you can now perform that task without assistance.
3. Now look at your top hand and the space above it. That space is the too-hard zone, what we might call the “fight, flight, or freeze” zone; it is everything you *can't yet know* because you have no way to access that information at this time. For example, this zone might include making a 5-course French gourmet meal for 20 guests, or playing professional football, or doing advanced calculus, or speaking fluent Russian. “Fight, flight, or freeze” means that, faced with a currently-impossible (though not always-and-forever impossible!) task, your brain will either force you to fight (yell, cry, argue, act disruptively), to flee (put your head down, say you don't care, give up, leave the room, drop the class), or to freeze (become immobilized or numb). In scientific terms, your amygdala in the limbic system of your brain goes into emotional overdrive and overrides or shuts down cognition (Goleman 2011). If it hijacks the capacity for clear thought, then the reaction might be seen as impulsive or overly-emotional or irrational; but, in fact, it is a brilliantly protective feature that allows us to find ways around situations perceived as dangerous. In learning terms, it can allow us to recognize the need to get ourselves or our students back into the zone of learning.
4. Still holding your hands up? Good. Now look at the space between your two hands. That is the Zone of Proximal Development; and that is the zone, the *only* zone, where teaching and learning can take place. That is the zone where learners stretch beyond the comfort level with guided help from teacher, a coach, a mentor, or some other more-knowledgeable resource or person, but not stretched so far as to feel shut down. It's a beautiful thing, the ZPD, and it guides all learning for all people.

Okay, you can put your hands down now and let's consider what this zone of learning means for teaching.

The comfort zone is an interesting place ‘to hang out’ sometimes; it reassures us that we are capable and it requires little effort from us. But we don't want to stay in that place, or we will never advance our own learning. Teachers should permit a bit of time for students to be in the comfort zone, such as with familiar texts or songs,

but they should not be allowed to hang out there for too long, as students (and teachers) can become bored or disengaged. Teachers must also remind themselves to move beyond their own comfort zones as well, perhaps a more difficult task than that of moving students along in their zone of learning.

The ‘fight-flight-freeze’ zone is not at all a fun place to be, and so teachers must continually assess whether certain student behaviours might be a reflection of the teacher asking for ‘too much’ from a given student or classroom. There are also those students who have an overactive, easily-triggered, amygdala due to neurological factors, such as autism spectrum disorders or trauma. These students may hit the fight-or-flight zone more quickly than the norm, but the result is the same: no learning.

If we teach, say, a group of Class 4 students, then we have some idea of the normed expectations of ‘Class 4’ explicit curriculum; what Class 4 students should know by the end of the school year. The curriculum is a good starting point for trying to identify the ZPD of students, but we must also get to know our students as individuals who may or may not fall comfortably within that presumed zone. Simply saying, “Here’s the curriculum, so do it,” means that *some* students will learn within their ZPD, *some* will land within their comfort zones (no learning, finding school boring, too easy) and *some*, more disastrously, within their ‘fight-flight-freeze’ zones (also no learning, but finding school terrifying). To refer to a previous example, you can’t make me learn Russian any better or any faster by telling me to just “do better” or “care more,” or by punishing me with negative marks. You will only exacerbate my extreme reactions that are driven by my amygdala, not by the cognitive or rational parts of my brain. If the teacher keeps pushing a student in ‘fight-flight-freeze’, it will only escalate the situation, and the one who loses is the student who is already in a state of distress.

Instead, a teacher might recognize that distress, and work to calm down the over-active amygdala, such as through words of comfort, a safe space for the child to rest, or some small action (a glass of water, a cracker, a silly poem) to bring the child back down emotionally.

The ZPD also embeds the notion of scaffolding; that is, understanding each student well enough to build carefully constructed steps toward higher and higher goals. It is not enough to say, “Well, I broke that difficult math assignment into steps, so they should be able to do it now.” Some children might respond to those steps, but others might need even more breaking-down, and still others might require more enriched study to advance. This concept of scaffolding gets tricky, as we need to be continually conscious of the ways in which our biases and assumptions, our own ‘rivers’ of belief, might influence our perceptions of certain children. In sociocultural theory, intelligence is not an absolute, reified, permanent condition, but rather a relationship with opportunities, with teaching and learning, with social and cultural realities within a given river. Seen in this way, scaffolding is intended to be a positive support system, one that believes in the potential of every student. It also allows the ZPD to represent a fluid, ever-upwardly-expanding potential.

This concept of scaffolding leads us easily to the metaphor of building, of constructing knowledge together, teacher and student, in relationship with each other.

What Is Social Constructivism?

A theory that builds on Vygotsky's work and that harkens back to Dewey (1897) is "social constructivism," the notion that learners actively mediate knowledge within a social context (Hirtle 1996). This theory accommodates a social view of learning that also permits an exploration of how the individual makes sense of experiences by accommodating them into what s/he already knows. Thus, this notion allows for an interplay of the individual and the broader social context (Nasir and Hand 2006). Cooperative, inquiry-based approaches to classroom methodologies permit students to engage personally and actively to build their learning, redefining a more traditional view even of *knowledge* itself. A more recent term for social constructivism is "interactive constructivism," locating the construction of knowledge in the realm of activity (Reich 2007). This interaction implies that every learner—including both student and teacher—must construct learning actively as an agent; must communicate within a context and culture as a participant; and must take time to reflect with metacognitive awareness as an observer to what is happening in the classroom (Reich 2007). This activity is filled with energy and openness.

In a social constructivist model, the focus shifts from the teacher who is 'teaching' to the student who is 'learning,' using communication to build on students' prior knowledge, perceptions, beliefs, and home cultures (Hirtle 1996; Shuell 2016). Knowledge becomes dynamic and interactive, with a focus on critical and creative thinking through problem solving and critical inquiry. It allows for the investment of the self as agent within larger socio cultural forces (Thorne 2005). Remember the earlier discussion of the tendency to swim or float or fight against the current? This theory allows the teacher to engage in agentic choices with students, even within the 'river' of the classroom and school, and, ultimately, the larger societal forces.

Schema

As a teacher, building on students' experiences and prior knowledge means tapping into their schemas, their minds' building blocks that help organize new knowledge, a term originally introduced by Piaget (MacLeod 2015).

I tend to use two different metaphors to better conceptualize the idea of schema: that of coat hooks and of fireworks. Think of hanging bits of new knowledge or learning onto a hook, onto what we already know. If I am learning a new language, for example, my first step is to link it to the language I already know, and then keep

building and expanding based on new concepts. Here, you can easily see the connection to scaffolding; breaking learning down into steps that are accessible to each student based on that student's schema, and, consequently, building the learning within the student's ZPD. If there is no coat hook available, the new bits of knowledge slide to the floor.

I also think of fireworks: each new bit of learning explodes outwards, building even more connections for the next set of explosions. Schema expands, not in easily-defined stages, but as a network, with new learning not only being accommodated by old knowledge, but permitting an exponentially expansive web. Thus, the more students engage, experience, read, communicate, and collaborate, the greater their potential for future learning.

Moving from Theory to Practice: Ideas for the Classroom

The question still remains as to how to translate a theory or ideology into practice. While teachers may agree in principle with a more culturally-responsive, interactive, social constructivist pedagogy, it may be more difficult to envision the day-to-day real-life activity of a classroom setting. You might find yourself asking, "But *how* do I do this in an overcrowded classroom with limited resources and limited time?" Interestingly, note how we as teachers can retreat to the comfort zone! We might, for example, tell ourselves that it is impossible to implement these theories into practice; that we don't have time or know-how to do so; that such a shift will impede the learning for those at the top; and so on. We can come up with many reasons to keep on doing what we've always done, to stay in our comfort zones, that space below our bottom hands in the ZPD model. When we consider shifting to a learner-centred constructivist classroom, do we find ourselves edging close to fight or flight? Do we want to argue the point, or retreat, or simply revert to our comfort zones of 'the way we've always done things'? If you find yourself formulating these types of dismissals in your head, ask yourself if you are in 'fight, flight, or freeze' or if you simply want what's comfortable. Remember that both of those possibilities shut down growth. Real growth happens in that middle zone of healthy risk, discomfort, but not terror or shut-down. Teachers too need scaffolded support, through professional development workshops, mentoring, and leadership within schools, and strong how-to texts to read, in order to take risks within the ZPD. This very chapter might be a step of the scaffolding that a teacher needs to move beyond the comfort zone into a healthy place of growth and learning. Remember that teachers are also learners, and constructivist theory insists that teachers should learn and grow in relationship with their students.

The following are a few ideas to begin or continue the process of creating inclusive, interactive, and responsive classrooms.

- a. **Pairs or Small Group Work:** Ideally, small groups should be between 3 and 5 students, because groups with more learners tend to lead to some students doing

more of the work and others retreating to comfort zones. Small group work can be used for projects and presentations, for sharing out readings, or for working together on worksheets or other activities. Teachers can assess participation by asking group members to submit a list of who did what, or by assigning roles to students such as ‘note taker’, ‘question asker’, ‘mediator’, ‘illustrator’, or any other responsibilities the teacher might develop. The jigsaw technique involves giving different texts, parts of texts, or assignments, to different groups of students, who then share their learning with the whole group (Filkins 2007).

- b. **Think/Pair/Share:** This method is one of my favourites for ensuring fair and equitable participation of all students. First, ask students to privately jot down or think of a response to a relevant question, or to summarize a key point made. Then, ask students to pair up and share their response with each other. You may take an intermediary step here to ask pairs to then pair up, thus expanding the groups into sets of 4. Finally, ask each pair or group to share out one response. This activity ensures that all students have formulated a response, provides every student with a voice within a small and safe partnership, and allows more vocal students to share out, at the end, to the whole group (Simon 2017).
- c. **Portfolios:** Have students build a collection of their work throughout the year. At various times, students can examine their portfolios for a self-reflection of their growth to date. A portfolio also provides a strong assessment piece to share with parents and to see concrete examples of learning.
- d. **Chalk Talk:** Ask students to come to the board to write questions, solve a problem, or write a word in response to a prompt. Students are given time to do come to the board as they would like, while the room stays silent. Again, this gives a safe venue for sharing ideas without the pressure of being called on unexpectedly during class time (Fenton, n. d.).
- e. **Differentiated Instruction:** The concept of differentiated instruction is about meeting individual students where they are, drawing on their unique strengths, preferences, and learning styles. For example, do not only give instructions orally for auditory learners, but also write them on the board for visual learners. Honour students’ personalities, background, and interests, by appealing to differences in various ways, such as types of examples used, or the choice to work alone, or with a friend. Consider allowing a choice of final projects, such as a piece of art, a story, a musical piece, or a skit. (Note: In any assessment, however, even when differentiating to meet the strengths and needs of all children, be sure to keep the actual standard or objective the same for all students, and to be consistent with grading criteria.) (Tomlinson 2000).
- f. **Allow space and time:** Students must be provided space and time to think critically and creatively, and for active engagement and reflection. Give students time to ask questions, to write in journals, to speak up with opposing viewpoints. Give them opportunities to stand up, to move around, to play games, and to participate in their learning. This type of engagement is vital for student motivation and growth.

- g. **Consider the classroom environment itself:** seating arrangement, music, wall displays, and lighting. How might a teacher enliven the space to be warm, welcoming, and interactive?

These ideas give only the starting point for stretching yourself within your ZPD to build methodologies that reflect constructivist ideologies. They might also serve to affirm the good work you are already doing.

As you aim to teach to each student's ZPD for a given subject matter, remember that you too are also learning and growing within your own ZPD, in active and fluid relational interactions with students. The essence of social constructivism is the student-teacher relationship. As Johnson (2010) explains, "To relate means to make connections ... Instead of an authoritarian, top-down relationship based on rules, power, and authority, holistic educators seek to create more equal relationships in the school and classroom based on principles of respect, community, and a shared set of values" (xix). Palmer (2007) refers to this communal respect as the teacher's "capacity for connectedness" (11). Such connectedness and engagement creates meaningful and lasting learning experiences for everyone.

Examples: What Beliefs Exist About Teaching and Learning?

Example 1: Indian Village. From January to May 2016, I was in India as a Fulbright Scholar, during which time I was able to visit schools in many places around India. One of these visits took me to a remote village where young children from often-illiterate homes were learning Hindi for the first time. What I saw happening defied explanation, as the classroom created a joyful place filled with happy children and an equally happy teacher. In this setting, there were no chairs or desks to get in the way of the vibrant activity happening, the singing and marching and clapping, the sitting in circles around vocabulary cards, the individual writing of personalized stories, the leading of calendar activities by the children themselves. The teacher participated in the lives of the children through culturally relevant pedagogies, and the children were engaged in learning by connecting the new to the known, through a carefully scaffolded program that worked within the children's ZPD. It was not only a model of what could be, but of what is, when best practices emerge from best theories around teaching and learning.

Example 2: My first job. Let's return to my opening scenario of my first teaching job in an inner city elementary school in the U.S. All the children were from the under-privileged circumstances. They listened to different music than what I was familiar with; they lived in large apartment buildings, unlike my small-town upbringing; they spoke a variety of languages and engaged in a variety of urban cultural and social practices. In short, their 'rivers' were both similar to, and distinctly different from, my own. I knew that the teaching of Class 1 content was only a fraction of my new job; the deeper value of our time together, and the way in which the content was going to 'stick', was through getting to know these children,

learning from them, being open to what they saw, believed, felt, and experienced. I often took small groups of them to New York City, taking the metro underneath the Hudson River and arriving at the Twin Towers where we all gazed in awe at the tall buildings surrounding us. I brought them to the local library where they got their own library cards. I talked to parents and listened to what they expressed for their hopes and fears, their lived realities that they trusted me enough to share. By the end of the year, my students learned to read stories, I learned to ‘read’ the environment, and we all learned to care for one another.

Holding Our Beliefs in an Open Palm: What Does This Mean?

Hold one hand out, palm upward, as if it holds a fragile butterfly. Returning to the first set of questions about our beliefs around teaching and learning, we must learn to hold those beliefs in an open palm. What does this mean? Look at your hand: you are not dropping what it holds, nor are you crushing it in a fist; you are merely examining the butterfly. You do not need to abandon a given belief, only consider it: What does each belief look like, feel like, mean to you as a teacher and to your students? Could you let the belief go if you find it doesn’t suit your practices and current beliefs? Are you compelled to hold the belief tightly, perhaps too tightly, in your grip?

Interestingly, to prepare for a presentation about this idea, I did a Google search for “open palm” images. A screen shot appeared with a variety of pictures of open hands.

Given the topic of the talk, I found myself asking, “Whose hands are portrayed? Whose are not?” I was suddenly confronted with the reality of the image: all of the hands were five-fingered, no differently-abled or scarred ones; all were white; and all, or certainly most, seemed to be adults. Consequently, whose reality is or is not portrayed in this simple source of open palms? What is the “null” curriculum being taught and learned in such an image?

Closing Reflection

The inter-relationship among the elements of learning discussed in this paper should be evident. Sociocultural theory provides a starting point for considering the ‘river’ of our own lives and as important, the lived realities of our students. To consider teaching and learning within a fluid and personalized Zone of Proximal Development means, necessarily, to also consider the ways in which we construct knowledge in relationship to others. Social constructivist thought and practice offer

a lens that makes learning meaningful, as we scaffold new knowledge within the ZPD by hooking it onto each student's schema for continual neural fireworks.

Rodriguez (2012) states that “teachers must constantly change themselves based on the interactions they have with their learners [T]his dynamic, interactive dimension of teaching requires that they know their own teaching brain as well as they know how their students learn” (177). Palmer (2007) takes this sense of self-knowledge beyond the brain, however, insisting that “teaching holds a mirror to the soul” (3), a mirror that effective teachers must be willing to look into every day.

This chapter began by reflecting on beliefs around teaching and learning. In sum, the questions teachers should never stop asking the following questions:

- What do I believe? Why do I believe it? Why does it matter?
- How do my beliefs impact my behaviours as a teacher and learner?
- How does my ‘river’ of circumstances and associated factors impact me and those around me?
- How do I keep myself critically and creatively engaged as a teacher and learner, now and into the future?

Asking these questions—holding our beliefs, values, and pedagogical practices in an open palm—requires courage and humility. This courage can enable teachers, who swim in the currents of their own rivers, to become agents able to engage in forms of resistance, and to disrupt hegemonies and blind spots. Such questions, theories, and practices become an endlessly intertwined web of reflection and engagement, involving our whole and true teaching selves.

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Chapter 17

Heterogeneity and Dynamism in Indian Classrooms



Toolika Wadhwa

Introduction

The chapter will discuss some of the provisions of two educational policies that influence contemporary classrooms in secondary schools in Delhi: The Right to Education Act, 2009 and Chnauti 2018. The focus is on understanding the implications of the two legislations on processes and practices for addressing a heterogeneous classroom.

The chapter presents a discussion on the conceptualization of a dynamic classroom and details the nature of heterogeneity in Indian classrooms. The notion of a dynamic classroom is couched within the larger context of diversity in a globalizing world. This will be followed by exploring the ways in which heterogeneity interfaces with classroom spaces to develop a dynamic teaching learning context. Popular literary sources have been used to support the argument. In discussing policy provisions, the focus is on exploring the inferences that can be drawn for heterogeneous classrooms. This will also be supplemented with insights drawn from school contexts. While much of the chapter rests upon the analysis of literature and policy perspectives, it also relies on anecdotal observations from the field, in the last year. This presents the backdrop within which the discussion in the chapter may be understood.

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Understanding the Context

As a teacher educator, every year provides an opportunity to visit a school as an observer of teachers in the making. While the purpose is to provide feedback to trainees and help them grow as teachers through shared experiences and discussions, the visits also hold tremendous potential in developing insights about at least one, if not more, school every year. The school functioning, the engagement with school students, teachers of the school and my own students, who are popularly known as ‘trainee teachers’, provide fresh perspectives that help to maintain the theory-practice linkage between my teaching in the college and field realities. This year provided sharp and immediate evidence to the influence of a change in policy on the functioning of a school. Even before I joined a school as an observer, I had heard numerous trainee teachers talk about the implication of Chunauti 2018. These came from schools across the city. Many of these stories were half-baked interpretations that seemed far from reality. Trainee teachers came back from school observations with anecdotes about one section always being free, teachers constantly labelling school students as incapable, disinterested in studies, and failures who would drop out on their own. Further discussion in college provided no insights about how these students were clubbed in a section. All our theories of addressing learner diversity through peer learning, sharing, accelerated and enriched programmes, planning to address diverse capabilities every day, addressing varying learning styles, and the like, suddenly seemed futile. My quest to understand the sudden change led me to contact friends who were school teachers. Over numerous cups of tea, I listened to the provisions of Chunauti 2018, what led the government to introduce it, and what were teachers’ opinions on it. I was sometimes told how futile everything we learn in teacher preparation programme becomes in the face of diversity in the class, where the stress is on results and performance. It appeared that the easiest way out was to take ahead those who could, and leave behind those who were marginalized in terms of academic achievement, learning ability, or cultural capital. Chunauti 2018, however, is not just an excuse. It is in fact, a response to demands made from the education system. The discussion in the subsequent paragraphs will highlight how these demands imply lesser dynamism, greater homogeneity, and heightened focus on results in terms of marks.

Conceptualizing a Dynamic Classroom

While there is no clear cut definition of a dynamic classroom, it is not difficult to discern the dynamic classroom from a static one. The word ‘dynamic’ is frequently used when referring to someone or something that is full of energy, and enthusiasm. When referring to a dynamic classroom, the element of change is also included. A space where students, and teachers are learning and growing together cannot be devoid of change. This is in sharp contrast to a static classroom that sees little activity and change. Such a classroom is often marked by drudgery, routine tasks,

and little student engagement. Hargreaves (1993) argues that “teachers at primary school level work in a culture ‘with high sensitivity to unpredictabilities and particularities of context, to the importance of interpersonal relationships and to the successful completion of the task-in-hand’ (p. 104)” (cited in Pointon and Kershner 2001, p. 56). In other words, classroom spaces are inherently characterized by dynamism due to the unpredictable nature of processes within the class. This is likely to influence teacher-student relationships and the processes through which specific tasks are carried out within the class. In a static classroom, the teacher’s energies would be aimed at reducing unpredictability and dynamism. This will involve regimentation and strict structuring of classroom processes.

Osborne (2001) emphasizes the dynamism in students in her class. She writes, “... the community of the classroom is dynamic, its purposes and focuses shift and reshape themselves as our explorations evolve. The constant is the way I wish the children would interact with each other. Because I ask the children to act in a certain way (and they usually comply), the focus of the community can change without the community dissolving. The children value each other and so they value expressions of new ideas. These ideas become new purposes for both individuals and the group as more and more children explore them. But this goes in the other direction also—because the community reflects differences as well as similarities it is beset by centripetal as well as centrifugal forces. The teacher must act to balance the two” (p. 75). In recognizing variation in backgrounds of students, Osborne is able to recognize the diversity in her class. She raises an important concern in maintaining the strength of diverse identities while encouraging students to embrace and accept each other’s heterogeneous backgrounds. An Indian classroom, particularly in urban areas, is likely to encounter diversity in terms of caste and class. Thus, teachers are likely to do well if they are attuned to heterogeneity in students’ backgrounds.

Charischak (2011) describes the dynamic classroom as “a place where the discourse between teacher and students in the context of using rich resources produces engagement and learning. Success depends on what the teacher does, the script or action plan that she or he creates, how it fits in with the needs of the students, and the quality and utilization of resources.” An analysis of the above highlights that a dynamic classroom will be characterized by three key aspects; these are:

- Quality and utilization of resources
- Engagement with learning
- Teacher’s actions in relation to the needs of the students.

When referring to the quality and utilization of resources, the discussion is not limited to use of a plethora of teaching resources. The classroom space can be physically dynamic. This can be through ensuring that appropriate resources are available in the class. The focus should be on the quality of resources and not the quantity of resources brought to the class. A dynamic classroom will not see the teacher acting like a magician, taking out new tricks from her bag to keep the students engaged. Instead, the teacher would assess the needs of the students, the content to be engaged with, and make appropriate choices of resource material accordingly.

Further, the construction of the building, and the classroom can itself be an important aspect in building dynamic classroom spaces. Dynamism can only be expected in a physical space that allows for free movement. Classrooms are often conceptualized as tables and chairs that are placed in straight lines. It seems that they have been purposefully so arranged to reduce student interaction and movement within the class. In such an environment, there is little space for peer learning, group discussions, and interacting with the natural environment. A dynamic classroom space would thus require arrangement of furniture in a manner that is conducive to encouraging student interaction. This can be done by allowing space for round table discussions, designated places for students to work individually, activity corners, and free movement. A school building that provides a safe space to the children to engage with nature will also influence the nature of teaching learning processes.

A description of the classroom topography of Mirambika, an alternative school based in Delhi, is apt here. Sibia (2006) writes that the physical organization within a classroom in Mirambika is designed to address the needs of different learner groups. Classrooms for younger children have larger work areas and low tables to suit floor seating. "The younger children's classrooms have an annexe which their teacher explained, 'is used by children for sleeping in or for those children requiring special attention or for attending to a crying child away from the curious eyes of the peers'" (Sibia 2006, p. 59). This allows for free movement in the classroom spaces and also a chance for open engagement with peers and teachers. Further, the school is structured to embrace diversity in age and learning levels. Students are not separated into compartmentalized structures within the four walls of a classroom. "Low walls separate the areas of work for different groups. This gives an impression of unobstructed space ..." (Sibia 2006, p. 59).

Thus, infrastructural provisions can be an important influence on the way dynamism is promoted within a classroom. In a place where heterogeneous needs cannot be catered to, through innovation in structural design, a static environment is likely to develop. Even within a static environment, the subjectivity of experiences must be recognized. "Each person's experiences of an environment are unique and constantly subject to variation, largely because people learn from their own experiences. Many factors connected with individual development and learning, including perceptual sensitivity, personality and temperament, combine together to ensure that however uniform an environment might appear to be, people's actual experiences differ very considerably (p. 96)" (Howe 1984, cited by Pointon and Kershner 2001, p. 55).

This brings us to the second important element of a dynamic classroom, which is student engagement. Here, the reference is to the engagement of the students with the content. This will be facilitated by engagement with the teacher. A teacher will only play the role of a facilitator: asking questions, helping students to think and learn on their own. The content itself will also not be static and restricted to prescribed textbooks. In discussing themes, events, and phenomena, the teacher will encourage students to ask as many, and as varied, questions as they can. Developing multiple perspectives through listening to each other will be the

hallmark of such a classroom. In a particular school, twenty-four students of year six class were asked to fill a questionnaire to give suggestions about gender related seating arrangements. Responses of two of the students were as follows (Pointon and Kershner 2001, p. 59):

...When you're in a group you have different opinions. Rather than finding out what a couple of people think, you can find out what everyone thinks. (Laura, Class A)

Most girls like to have a group of girls and boys like to have a group of boys. But sometimes in music maybe, some boys are good at music, and some girls are too. If you mix them together you make a good piece of music. (Emma, Class A)

What this highlights is that, although pre-adolescent students prefer to work in groups with their friends, they also recognize the importance of multiple and diverse opinions. Emma's quote above also points to the recognition of how acceptance of diversity is improving performance. In a tacit way, the teacher has been able to build acceptance for diversity in her class.

In a static classroom, in contrast, the process will be teacher-centric or content-centric. Mastering the content and rote memorizing will predominate over learning and growing. Diversity here will be seen more as a challenge than as a strength.

The third important element is the use of need-based strategies by the teacher. This points towards classroom management. How does the teacher manage the class? Are children given clear instructions to be followed or are rules made through a collaborative effort between the students and teachers? Are students convinced about classroom processes and have they any say in the flow of the class or school day? Is the teacher's objective of teaching in the class to keep students in their seats and quiet during the school day? Are students encouraged to engage with each other and are there spaces allowing them to be free within the classroom? These questions run along a common thread that point toward focusing on the needs of the students if the teacher wishes to engage with them effectively. Dynamic classroom management will not be governed by strict rules and instructions. Instead, students will be co-partners in developing rules. At Mirambika, an effort is made to engage students in developing school norms. One of the students reported:

The Principal had a talk with some 6-7 children from the senior groups after hearing about use of offensive language by a student in class. Tells them that by their misbehaviour they are harming themselves and Mirambika. The children express "he is always using" such words and desired that the Principal take a tough stance. He is not willing and children put forth their arguments, in defence. The boy in question is bewildered and explains his point saying "Boys I play with also use the same language but no one checks them". He however shows his willingness to make efforts at not using undesirable language. The class is adamant... (Sibia 2006, p. 71)

The excerpt further describes that the principal encourages children to look beyond each other's mistakes. A date is fixed for further discussion and finding solutions. The episode brings to the fore the possibility of re-envisioning disciplining strategies. By putting a democratic setup in place, the school can be made a place where discipline is internally, and not externally, enforced. In the episode

above, students are also encouraged to understand each other and be non-judgmental in everyday processes. Further, this ensures that there is no hidden agenda of the teacher. Students and teachers function with a sense of mutual trust and are working together rather than against each other. If the classroom was a film set, this could make as big a difference as casting a teacher as a protagonist or an antagonist!

If we explore popular literature contextualized in educational settings, we would see that dynamic classroom spaces are often also better learning spaces. In Braithwaite's *To Sir with Love* (1959), the teacher's countless efforts at 'disciplining' students in their late adolescence go waste till one day he tries a new approach. Instead of prescribing rules, he provides rationale for expected behaviours, addresses questions, and treats them as adults instead of children. The transition in the book is sudden and thus not without hiccups. Where students grow in an environment that promotes such an attitude from an early age, the processes will be smoother.

Totto Chan's adventures in the train school present the picture of a school Head Master who is approachable, who sits with students, listens to them and understands their perspectives instead of telling them what to do (Kuroyanagi 1981). Within the diverse contexts in the school, the head master was able to build these qualities in students as well. In the excerpt below, the headmaster is interacting with Totto Chan about a new ribbon that she has been wearing to school. Totto Chan excitedly describes her prized possession that her aunt has given to her and how it makes her look pretty even from the back of her head. Here the headmaster is subtly suggesting to Totto Chan to not wear it as other students may be envious and may be unable to afford it.

... "So that's it," he said. "Yesterday Miyo-chan said she wanted a ribbon just like yours, so I went to all the ribbon shops in Jiyugaoka, but they didn't have anything like it. So that's it. It's imported, is it?"

His face was more like that of a troubled father importuned by his daughter than of a headmaster. "Totto-chan, I'd be truly grateful if you'd stop wearing that ribbon to school. You see, Miyo-chan keeps pestering me about it. Would you mind very much?"

Totto-chan thought it over, her arms folded. Then she answered quickly, "All right. I won't wear it here anymore." "Thank you," said the headmaster.

Totto-chan was rather sorry, but the headmaster was in trouble, so she had agreed. Another reason was that the thought of a grown-up man—her beloved headmaster—searching high and low in all the ribbon shops, made her feel sorry for him. That was the way it was at Tomoe. Without realizing it, everyone got in the habit of understanding one another's problems and trying to help, irrespective of age. It became the natural thing to do. (p. 122)

Most schools that engage with children from diverse socio-economic backgrounds will vouch for adopting equalizing processes that are followed in schools. These include having a school uniform that prevents overtly visible differences in clothes; restrictions on the way festivals and birthdays can be celebrated; or organizing excursions at a nominal or zero charge to students. These are appreciable in themselves, but perhaps are inadequate in bringing an attitudinal change.

The measures commonly used by schools fall short of recognizing the problems of people from diverse groups and do not develop a sensitivity towards each other. While the headmaster also did not address social dimensions, he was able to empower Totto Chan in recognizing the emotional turmoil that the headmaster and Miyo Chan may be going through. This can go a long way in building compassion.

In another episode, a new student who is ‘English speaking’ joins the school. The headmaster introduces him to students as follows:

... This is Miyazaki. He was born and brought up in America, so he doesn't speak Japanese very well. That's why he has come to Tomoe, where he will be able to make friends more easily and take his time over his studies. He's one of you now. What grade shall we put him in! What about fifth grade, with Ta-chan and the others!

“That's fine,” said Ta-chan—who was good at drawing—in a big-brotherly voice.

The headmaster smiled and went on, “I said he wasn't very good at Japanese, but he's very good at English. Get him to teach you some. He's not used to life in Japan, though, so you'll help him, won't you? And ask him about life in America. He'll be able to tell you all sorts of interesting things. Well, then, I'll leave him with you.”... (p. 131)

In simple words, the headmaster was able to help students appreciate cultural and linguistic diversity. He encouraged peer learning and acknowledged the need to develop friendships in school. Thus, Totto Chan's experiences at ‘Tomoe Gakuen’ were able to help her develop a stronger sense of self, and an attitude of acceptance towards others of different cultures and abilities.

Badheka's *Divaswapna* (1988) presents lessons learnt from experiments in converting a traditional, static, class to a dynamic classroom. In a school driven by conventional teaching, Badheka talks of experiments of a teacher to teach through games and stories and without the use of textbooks. One episode describes the teacher's apprehensions:

My colleagues, the teachers, have no faith in me. They look down upon me as an out and out, impractical person ... But I have no faith in their beliefs and their methods of teaching. Those annoy me. I am sure mine is the right approach. My boys don't run away from me. They love me, respect me and obey me, whereas the boys of other classes run away from their teachers. I have seen them mimicking their teachers behind their backs. Not a single boy approaches his teacher with a smile or with affection. They sit in their classes silent, sullen and immobile and they indulge in mischief and quarrels when they go out of their classes. I have given reasonable freedom to my boys in this respect. They have some outlet for their restlessness in the class itself. So they do not create much trouble outside ... (Badheka 1988, p. 20)

Even in more popular literature, such as the Harry Potter series (Rowling 1997–2007), and Bhagat's *Five Point Someone* (2004), references have been made to classrooms that are static and thus, boring, characterized by little learning, and despised by students. The Harry Potter series also embraces diversity in cultures, learning interests and abilities. There are frequent references to children who are born to non-magical parents, referred to as ‘muggle-born’ (Hermione Granger, whose parents are dentists); students from diverse socio-economic backgrounds (Ron and Ginni Weasley and their brothers are shown as belonging to a middle-class family, through hand-me-down clothes and books; Draco Malfoy is shown to

belong to a well-to-do family); different family structures and home environments (Harry Potter is raised in his non-magical aunt's family; Luna Lovegood is raised by her father who is a magazine editor in the magical world; Neville Longbottom is raised by his grandmother); and learning interests (Hermione shows disinterest in divination but does well in logic based disciplines; Harry shows interest in flying and quidditch, Neville is keen about herbology, the Weasley brothers are interested in magical spells). The students are also shown to demonstrate solidarity in the face of diversity. While there are teachers who tend to discriminate on the basis of family backgrounds (Snape's support of Malfoy and dislike for Potter), there are those who are compassionate and encourage students to excel despite backgrounds. At the time of admission to the school, students are divided into houses on the basis of their abilities and talents: Gryffindor—bravery, Hufflepuff—hard work, Ravenclaw—intelligence, and Slytherin—ambition. Thus, Hogwarts is depicted as a dynamic, buzzing, space where students grow and flourish in their own ways.

Malala Yousafzai's biography (Yousafzai and Lamb 2013), is set in conflict ridden districts of NWFP, Pakistan. Yousafzai describes the student population in the school in which she was studying and was run by her father. Her cousin had come to live with them so that she could attend school which she was unable to in her own village. One of the girls, Shehnaz, was the daughter of Yousafzai's former domestic help. Shehnaz's brother was 'mentally ill' and unable to take care of himself. He was also studying in the same school. Shehnaz had not attended school earlier and was older than many girls in her class. Other students were also children of domestic helps and also had to 'collect rubbish' for their family's financial stability. Many of these children were allowed to study without paying the fees. "Giving places to poor children didn't just mean my father lost their fees. Some of the richer parents took their children out of the school when they realized they were sharing classrooms with the sons and daughters of people who cleaned their houses or stitched their clothes" (Yousafzai and Lamb 2013, p. 67). The narrative points out the social stereotypes and expectation for schools to be homogeneous place. The situation is not very different in Indian classrooms. If the school perpetuates such an exclusive culture, creating a homogeneous classroom space, students are likely to miss out on developing perspectives about lives of children from different socio-cultural backgrounds. Kumar (1992) also points out how such a divisive school system would also perpetuate a society that is fractured along class lines. It was through opportunities of taking up causes, working for radio shows, and participating in many different activities that Yousafzai and her friends developed the courage to fight for what they thought was right. This may not have developed in a homogeneous school space. Literature thus points towards the relevance of a dynamic classroom space.

It can be argued that some of these are fictionalized accounts and hold little relevance in the real world. However, research studies have also pointed out that dynamic classrooms have led to greater student involvement, active engagement of the students with the situation, and the development of more reflective teachers (Gil-Garcia and Villegas 2005). Heltemes (2009) studied the effect of within-class ability-grouping on middle grade children. The factors under study were the

academic achievement of children and their motivation to learn. The study found that students with above average ability did well in homogeneous as well as a heterogeneous groups. Those with average ability demonstrated better group performance in homogenous ability groups but performed better on tests in heterogeneous grouping. Students with low ability demonstrated better academic achievement in heterogeneous groups. Heltemes cites Poole (2009) to highlight that low achieving students benefit from heterogeneous groups, where they learn by simply observing students with high achievement. Levy (2009, cited by Heltemes) supports homogeneous grouping, with the rider that these groups can be frequently changed, and thus provide better opportunities to tailor make content to suit the needs of learners. Hawley (2007) discusses four strategies of homogeneous grouping: tracking, which involves using prior measures of academic achievement to keep students in the same groups over time and across subjects; instructional or ability grouping; pullout programmes for students with special needs; and differential teaching practices that are meant to reduce the demands placed on students with low achievement. Hawley goes on to question the inclusion on non-academic aspects, such as learning to work and learn with others, when grouping students. Sharma and Mehta (2014) conducted a study on students of class ten in a secondary school in Agra, Uttar Pradesh. The study revealed that teaching through the cooperative learning approach and using heterogeneous grouping on the basis of intelligence quotient and gender resulted in better social skills in students.

Heterogeneity in and Across Indian Classrooms

This section summarizes the nature of heterogeneity present in and across Indian classrooms. A great deal of heterogeneity can be seen in the different kinds of schools that exist within the country. There is the broad categorization of state funded and privately funded schools. However, even within the state funded schools, a great deal of heterogeneity is evident. Schools are sponsored by the central or the state government or both. In Delhi, the heterogeneity is evident within the Delhi government schools. Sarvodaya Vidyalayas, Rajkiya Pratibha Vikas Vidyalayas, Municipal Corporation Schools, which are sub-categorized into those that are run by Delhi and New Delhi administration: MCD and NDMC schools respectively. In addition, there are residential schools that are meant to promote education amongst specific communities. These may be for students from tribal and backward areas, girls from rural areas, and the like. Different kinds of school administration also translates into heterogeneity in the infrastructural provisions and the kinds of classrooms that students are likely to experience.

Schools that target specific gender populations tend to homogenize experiences within classroom spaces. Across classrooms, this means that the experiences of students studying in girls-only, boys-only or co-educational set ups, will be different. Similar homogeneity is also attempted in community-specific or religious minority institutions. These include schools run by societies to promote education

amongst specific communities or religious groups. Further, some of these schools may choose to run a curriculum that promotes religious, linguistic, or cultural education. Thus, the nature of education will also vary across schools.

Each school is also likely to have a set of rules that are influenced by the administrative authority running the school. Is it governed by rules decided by the state? Is the principal the sole decision maker? Does it rely on students' fees for funds? These, and other such questions, have a bearing on finances of the school. This influences everyday functioning as well as recruitment, resources available, and infrastructural development. This means that the quality of education is also likely to be different across schools. Kumar (1992) has pointed out that different kinds of schools also create a divisive society that perpetuates sponsored mobility within children from elite social backgrounds. While this divisiveness in itself is harmful to the society at large, through creating a vicious circle that limits education to those who can afford it, what this also creates is an illusion of a homogeneous classroom. This is far from reality.

Within each school, the classroom is also marked by heterogeneity in terms of gender, familial background, regional and linguistic background, and cultural capital of the students. Each student will thus bring to the class a different set of knowledge and experiences. This presents great heterogeneity within the classroom space, even if one or more constraints are taken to be constant. Kumar (2014) writes that "There is a need to recognize the changing social composition of learners in the classroom resulting from the increased flow of children from varied backgrounds in terms of caste, class, gender, ethnicity, language, religion etc. This diversity also presents new issues and challenges to change curriculum design, teaching-learning practices and processes, learning materials, teacher education, etc. so that they meet the different learning needs of children from diverse backgrounds. In order to address these issues and challenges, policymakers and practitioners, need to first recognize the different learning needs and interests of the diverse learners." This is particularly true in contemporary times that are marked by increasing globalization. Fiedler and Pinan (2008) argue for an education that builds 'global citizens' and not 'global players', thereby indicating the need for a paradigmatic shift from fact-based knowledge that fed into the industrial world. They also raise pertinent questions on the implications for building such a knowledge society:

When talking about the 'knowledge society', it is important to note there is no insinuation of 'other' societies being less knowledgeable. Instead, it is a deliberate use of a Western construct that highlights the development of technologies to make information more accessible than ever before to more people at the touch of a key. The questions are: Who has this easy access? What kind of information is being accessed and how? Who produced it and for what purpose? And crucially, when does information becomes internalized knowledge? To what extent is the learner exercising adequate levels of discernment? Is there enough awareness about the limitations of this 'knowledge' and the fact that pluralistic forms of knowledge exist which do not reach the cyberworld? (Fiedler and Pinan 2008, p. 4)

Kalantzis and Cope (2006) argue for three waves of globalization. The second wave had focused on a modern world that was characterized by mass production,

and mass consumption, leading to the emergence of a somewhat uniform identity. In this, globalization is at counterpoints with diversity. However, in contemporary times, we are on the brink of the third wave of globalization. This refutes the superficial acceptance of diversity and urges for its replacement with multitudes of knowledges, languages, questioning the very need for a finite uniformity. Technological advancements, for instance, have done away with the need for a global language, where English seemed to be dominating till a few years back. Now, there is machine-based translation available at the click of a button.

Most schools can be seen at the second wave of globalization, where the focus is on preparing individuals for the job market, who can compete in a fast changing world and can reproduce rather than think. This requires homogenization rather than diversity. There is no space for diverse knowledge systems. If diverse learning styles and levels were to be embraced, students will present a plethora of opportunities and challenges to the teacher in terms of transacting the curriculum and engaging with content in the classroom. This will be elaborated in the subsequent section.

Interface Between Heterogeneity and Dynamism in the Classroom

The heterogeneity in the classroom has huge implications for the classroom space. When students bring diverse learning styles to the classroom, it is an indication that a teacher's use of the traditional 'chalk and talk' method is not enough to fulfil their learning needs. Diverse learning abilities also manifest as varying ways and levels of engagement of students with the same content. Responding to their needs may involve changing the pedagogy, the nature of resources used, and even the content brought to the classroom. In contrast, a classroom that is homogeneous will not be marked by dynamic learning processes. Where all students are at the same level of learning and bring similar set of experiences owing to homogenous religious, cultural, and social backgrounds, there is little space for multiple perspectives, viewpoints, and divergent thinking. This poses restrictions on interaction within the classroom, making it unidimensional and sometimes even biased. Students miss out on learning from sharing of experiences, ideas, thoughts, and opinions. In the long run, this can present a static view of knowledge that rests on the assumption of a singular reality.

In addition, homogeneous classroom spaces do little to prepare children to engage with people from diverse background later in life. Acknowledging that schools function as primary socialization agencies, it is important to recognize that a homogeneous school would provide opportunities to intermingle with others of the same homogeneous group. Limiting social interaction to 'a' gender, religion, community, or social class, places boundaries on the child's social experiences. It is the same argument that is made for inclusive education. It is not just children with

special or different abilities that stand to gain from an inclusive education (NCERT 2005). In fact, all children, with a vast range of abilities and disabilities, learn to work together, building a culture of cooperation, caring and sharing. To sum up, there appears to be a direct relationship between dynamic learning processes and heterogeneity within the classroom space.

Policy Provisions

In this section, a digression is being made from the discussion above that highlights the importance of heterogeneity to bring dynamism to the class. In this section, we will talk about two specific policies that talk about Indian classrooms: Right to Education Act, 2009 (RTE Act) and Chunnauti 2018. The attempt is to briefly summarize the provisions that are of relevance in addressing the homogeneous–heterogeneous debate.

The rationale for choosing these two policies is that these two exert the most influence on the school processes. The RTE Act has been the single most influential policy in the previous decade. Its implications are immense and the implementation processes are still evolving. Teachers, and administrators, are still striving towards converting these policy provisions into ground realities. Chunnauti has been formulated, at least to some extent, in response to the RTE Act 2009. Owing to several provisions of the RTE, that will be discussed subsequently, the quality of education in schools came into question. This led to new reforms being put into place; some of which have originated as provisions in Chunnauti 2018.

In the discussion that follows, several portions have been marked through numbers which have later been used for cross referencing in the implications section.

The Right to Education Act 2009

The RTE Act 2009 has been a path-breaking step towards providing education to all children. The Act entitles all children, in the six to fourteen years age group, to free and compulsory education till the completion of elementary education. In its provisions, the Act then goes on to acknowledge that several different types of schools exist in our country. It goes on to say that children can be admitted to private schools if parents so choose. In other words, the notion of ‘free education’ is only applicable when parents choose to send their children to state run schools. In another provision, the act specified that 25% seats, in private schools that have received special privileges such as land from the state, will be reserved for children from economically weaker sections.

The act specifically provides for inclusion in school settings. Children from all cultures, religions, and with varying abilities and disabilities, are to study within the

same school setting. The no detention policy states that no child can be retained in a class till the completion of elementary education. In other words, students will progress to the next class without having to necessarily pass the annual examination. In a separate provision, the act also provides for the admission of children in age appropriate classrooms. This refers to ensuring that children are admitted in a class that corresponds with their chronological age, irrespective of their earlier exposure to formal education.

Chunauti 2018—New Academic Plan to Support Class IX

In June 2016, the Government of NCT of Delhi undertook data analysis that led to the understanding that the pass percentages of students in Class Nine had been steadily falling in the past few years and had come down to almost fifty percent. Chunauti 2018 came in response to the diversity in achievement that was brought to the class, in large part because of the no detention policy causing varying levels of reading and writing abilities within the class. The document attempts to find a solution by re-grouping children who are studying in Classes Six to Nine according to their achieved levels of learning. Details of baseline assessment to be carried out and the calculation of marks on summative assessment tests conducted biannually have been given so that students can be divided on the basis of their learning achievement so far. Those who have failed to clear the Class Nine final exams more than once are persuaded to shift to the ‘*vishwas*’ section that will function through the *Modified Patrachar Scheme of Examination*. Under this, students will be able to appear for the Class Ten examinations that do not require a Class Nine pass certificate. Those who have reached Class Nine under the no detention policy, without having cleared Class Eight examination, will be in the ‘*nishtha*’ section. Those who have cleared Class Eight examinations will form the ‘*pratibha*’ section. The circular then goes on to detail out the diluted form of curriculum to be followed to suit the needs of the *vishwas* section. It also talks about a mentorship programme where teacher mentors will help school teachers to identify resources that are suited to the needs of the weakest students. It also puts forth the need to convince students and parents to avail of the *Patrachar Scheme* instead of dropping out of school. The circular also urges schools to assign their best teachers to teach the weakest section of students.

Insights Drawn

In this section, the focus is on drawing insights from the discussion in the paragraphs above. Broadly, the discussion brings to light how educational provisions made by the government act as barriers to enhancing dynamism within the

classroom spaces. The paragraphs that follow will present an elaborate discussion on the same.

The RTE acknowledges the presence of diverse learning spaces by embracing the existing divisive school system. The implications of such a school system have already been addressed above through a reference to Kumar (1992). What this divisiveness attempts is to create a homogeneous school space with respect to social class. Those who can afford it will pay for their education, and thus attend private schools. Those who can't afford it, will attend state run schools. This is somewhat broken, through the provision of admission of students from EWS in private schools that have been supported by the government.

In making a provision for inclusive education, the act ensures that *all* children study together. This means that children learn to understand the needs of those who face challenges in their everyday life. They also learn to recognize the differences in the abilities of each, and with the right guidance, develop an attitude of empathy, rather than sympathy towards each other. At the school level, this translates into teachers working with special educators, thus enhancing their own capacities to work with children with varying needs. These maybe in terms of provision of physical infrastructure, additional resources, developing need based content, individualized education plans and the like. Teachers themselves develop attitudes of acceptance and encouragement and are able to build the same in their students where the focus is on what children can do, rather than on what they can't do.

In terms of physical infrastructure, the school is expected to provide for basic facilities that are necessary for children with special needs to access education. Provisions for ramps, rails, and disabled friendly toilets are the beginning points of a barrier-free infrastructure. Mere exposure to such facilities sometimes acts as a trigger for children to think in terms of the needs of others. Where such facilities are still being developed, children learn to recognize each other's needs, and modify schedules and tasks to ensure that each one of them is included in school processes. We cannot hope to develop such sensitivities in exclusive set-ups.

The no detention policy is specifically aimed at ensuring that children are not pushed out of school for having 'failed' in their first attempt at learning. This meant that children who had a slower than average pace of learning vis-à-vis other children of their age, could take longer to master a subject without having to repeat a year or to sit with other children younger to them. This also provided for accepting that children may not be at the same level of learning in all subjects. In other words, children are *allowed* by the school system to learn at their own pace and be at a higher or lower level of learning than their peers in specific subjects. This also holds true when admission is given in age appropriate classrooms. In practical terms, this translates into the teacher catering to the needs of children at diverse learning levels and abilities within the same classroom. The teacher will have to thus prepare different tasks, of multiple difficulty levels, to cater to the learner who is the slowest in her class and to the one who is, maybe, even ahead of the rest of the class.

While the Right to Education Act 2009 propagated diversity within the classroom, it posed a different set of problems for schools. The Chunauti 2018 document

begins by stating that the failure rate in Class Nine is a result of several factors that includes the no detention policy. Another factor listed in this circular is the huge variance in reading and writing within a single classroom. It is this heterogeneity that has led the government to promote a scheme that requires labelling and dividing children into various groups according to their achievement levels. It justifies the step as being in the larger benefit of students, as such regrouping is meant to facilitate teachers to focus on the learning levels of the students that need to be upgraded. They would not be distracted by having to address variances. The document repeatedly mentions the ‘accumulated learning deficit’ that has led to a decrease in pass percentage of Class Nine students. This accumulated learning deficit translates from a lack of basic skills in language and mathematics which are not made up for, over years of secondary education. Questions of the profile of students who are likely to suffer from a learning deficit, owing to a cultural capital that is not in consonance with the requirements of formal schooling, have been left unanswered. This means that we haven’t been able to identify if there are commonalities in the students who have been placed in the ‘*vishwas*’ and ‘*nishtha*’ sections in school, except the fact that they did not pass Class Nine or Class Eight exams, respectively. The Chunauti 2018 circular claims that this is in the larger interest of the students. In point 9, it reiterates, that “In fact, on many occasions, teachers have themselves reported that it is difficult to give the desired results as they have to cater to students who are at such diverse levels of achievements within the same class and within a short span of 30–40 min.” Thus, the circular seems to be in response to the failure of teachers to meet diverse needs within classroom spaces.

While Chunauti 2018 has restricted itself to talking of heterogeneity in achievement levels, it is an open question whether the same is not true for other forms of heterogeneity that the RTE Act addresses. Are teachers prepared to address the needs of children with special needs in a regular classroom? If not, will this affect achievement levels and will students be automatically labelled as ‘*pratibha*’, ‘*nishtha*’ and ‘*vishwas*’? Or will it require the preparation of a separate Circular addressing the need to single out students with varying needs? Will first generation learners, children from cultures that are not in consonance with expectations of formal education, or different age groups, also be automatically adjusted into these groups? The larger question is that will there ever be a time when diversity and heterogeneity will not be a challenge (*chunauti*). So in 2018, will all students be at the same or similar learning levels? In other words, is addressing diverse learning levels a short term requirement for teachers?

Observations in Delhi government schools and interaction with our student teachers teaching in schools this year also brings to light the huge impact that such divisions have had on school students. While a few isolated examples of schools assigning the best teachers for teaching *vishwas* section were heard of, in large part, schools tend to relegate students in the *vishwas* section to one corner of the school which is seldom visited by teachers. Needless to say, attendance dwindles and teachers do little to visit these classes. Interaction with some school teachers also brought to light that this had become the new excuse of labelling children as

‘disinterested’, ‘incapable’ and ‘wasting time in schools’. The attitude has also percolated down to the students. They are often heard of being upset over being put in the *nishtha* or *vishwas* section, which for them is demeaning and demotivating. Those in the *pratibha* section have already learnt to look down upon those in other sections. One teacher was even heard of using the threat of a shift to *nishtha* or *vishwas* section as a means to get work done.

The central argument in this entire debate is whether we are looking at heterogeneity as a challenge or as an opportunity. As has been discussed above, varying levels of learning, diverse backgrounds, abilities, and disabilities serve as important opportunities to teachers to bring multitude of perspectives, fresh pedagogies, ideas, and opinions to the class. By looking at it as a challenge, and using labelling as a tool of convenience, we are restricting the teacher to looking for stop gap solutions that help in focused teaching in the short run. The divisiveness it creates in the school, between students, and the impact that this will have on students’ attitudes in the long run is yet to be seen and documented.

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Chapter 18

The Ethics of Inclusion



Geeta Kumar

Introduction

Thomas Jefferson's 'all men are created equal' is an important phrase from the US Declaration of Independence. However, in reality, this belief that everyone is created equal and that we all have the same chance to succeed in life, is flawed. The truth is that we are not all created equal in our ability to achieve success. Everybody has a unique set of strengths and also a unique set of shortcomings. These characteristics allow or inhibit them from achieving success. Access to a wider education system can increase the probability of people reaching their full potential and hence success. Everyone has an equal opportunity to good education can also bring about a fair and just society with very little discrimination.

Every child has a right to an appropriate and efficient education in his or her local mainstream school. The right to an Inclusive Education has been explicitly stated in Article 24 (Education) of the United Nations Convention on the Rights of People with Disabilities (2006). The ethos that 'Every child matters' and the Basic Human Rights make it imperative that children of all abilities not be discriminated against and receive the same education and resources as their peers.

Much more than a policy requirement, Inclusion is founded upon a moral position which values and respects every individual and which welcomes diversity as a rich learning resource. At a time when the educational landscape is rapidly changing with mass scale movement of people across borders, schools have to provide for learners of increasingly diverse abilities and family, ethnic, and cultural backgrounds. Therefore, respect and equal commitment for all learners seem more important than ever.

Legislations are made in different countries to promote Inclusion in schools. As I have been working with Special Educational Needs (SEN) children of a

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Comprehensive School (A comprehensive school is a secondary school or middle school that is a state school, and does not select its intake on the basis of academic achievement or aptitude) near London, UK for the past seven years, I have a fair insight into the process of inclusion and how it works at the school level. My experience has brought into focus a few ethical questions that I would like to share. In this paper, I would also like to discuss the legislative process of inclusive schools in the UK and then share my experiences of having worked with SEN children in my school. I have also included the views of a few parents and teachers in my study, to provide a more rounded perspective to the idea of Inclusive schools. It also highlights the overall experience of SEN children in mainstream schools and provides different angles.

Legislation and Inclusion

How does the Law protect the interest of children with special education needs (SEN children)?

Human Rights and Inclusion

The UNESCO Convention against Discrimination in Education (1960), and other international human rights treaties, prohibit any exclusion from or limitation to educational opportunities on the basis of socially ascribed or perceived differences, such as sex, ethnic origin, language, religion, nationality, social origin, economic condition, ability, and so on. Education is not simply about making schools available for those who are already able to access them; it is about being proactive in identifying the barriers and obstacles learners encounter in attempting to access opportunities for quality education, as well as in removing those barriers and obstacles that lead to exclusion.

UNESCO defines inclusive education as ‘a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision which covers all children of the appropriate age range and a conviction that it is the responsibility of the state to educate all children’. Inclusive education is not a marginal issue, but is central to the achievement of high-quality education for all learners and the development of more inclusive societies.

So what do these Human Rights imply for children with disabilities? It basically allows them opportunities to have access to a wider curriculum than what they would have experienced in a segregated school and also have access to the same

resources and opportunities as their peers. It also allows them opportunities for better social cohesion. These are the basic rights any sensitive society would wish for its children.

Legislation in the UK for Inclusive Education

Law in the UK prohibits discrimination in education and supports inclusive education. The Special Education Needs and Disability Act 2001, delivers a right to mainstream education for all children with SEN. Until October 2010, legal prohibitions of discrimination were found in a number of different laws enacted over many years. On 1 October 2010, the Equality Act came into force, consolidating and strengthening the various equality laws. The UK also has obligations under International Human Rights law to provide inclusive education for all children.

The UK has ratified the following International Human Rights treaties which place the Government under an obligation to provide education free from discrimination:

UN Convention on the Rights of the Child (ratified by the UK in 1991)

UN Convention on the Elimination of All Forms of Discrimination against Women (ratified in 1986)

International Covenant on Economic, Social and Cultural Rights (ratified in 1976)

International Convention on the Elimination of All Forms of Racial Discrimination (ratified in 1969)

UNESCO Convention against discrimination in education.

Why Inclusion?

Moving away from Laws and Legislation, let's look at what Inclusion really mean in a real life scenario. Arguments for inclusive education are well documented and rest on notions of equality and human rights. Much more than a policy requirement, Inclusion is founded upon a moral position which values and respects every individual and which welcomes diversity as a rich learning resource.

In today's modern world, we all agree that valuing some people more than others is unethical. People with disabilities (or differently able pupils) should be empowered in the society and not feel marginalized and prejudiced. They all need opportunities to grow and develop as useful and contributing adults. Not allowing students with varying abilities to share each other's experiences and differences, makes way for a society which loses out on the enriching experience of learning to live with a cohort of people, who all have something to contribute. We do not want our children to grow up as adults who are unable to live with people who 'are not like them'. Inclusive education not only provides an equal and fair chance to

students with disabilities but it also provides valuable learning experiences for other children in mainstream schools and develops their ability to live and manage with others, who may be different to them. Visualizing an educational environment where children of all abilities, nature, and ethnicity interact, support, and learn may seem like a utopian idea, but don't we as educationists aspire for a world where differences are not anything to be looked at suspiciously but to be appreciated and to be used as enriching experiences?

Do we not want to live in a society where all barriers are removed rather than with walls built around our small narrow worlds? And what better way to achieve that than with our young children who will learn the ways of the world from the adults around them who put them in the right learning environment?

I work as a learning support assistant in a Comprehensive school which has a good reputation of providing able support to children with special education needs (SEN). The school has a Personalized Learning Department, which caters to the needs of students with all types of learning and behavioural issues: Children with Autism, ADHD, Dyslexia, Vision and Hearing issues, Behavioural, Emotional and Social difficulties (BESD), and various other issues. As directed by law, the school cannot refuse admission to any student on the basis of their abilities or disabilities. The Personalized Learning Department has around 40-odd Learning Support Assistants (teaching assistants). The department supports SEN pupils in the school. Some of these pupils have statements or classroom support plans in place (by local Government authorities) and there are also some children without such formal provisions. Our role in the school is to support the SEN pupils in their normal classroom setting. It is to help them access the National Curriculum along with their peers. This is also further supported by helping the teachers in preparing differentiated work for such student.

So, what are my personal views regarding inclusion? What are the issues I encounter in my work days with these children?

I have seen numerous SEN children enter the Secondary School in Year Seven (age 11). A number of them welcome the support offered to them in the classroom by their teachers and the teaching assistants. However, their behaviour changes as they grow older. A few of them start depending too much on the support as they move up in school. They are not able to function without the support of an adult in their classroom. At times, it also becomes a mental block. Their dependence does not allow them to try and think on their own. It can also be the lazy way out. They, too, can refuse to work without their 'crutches', using their disability as an excuse!

However, there is also another group of students which is totally different in its reactions. They start resenting being singled out in lessons, by being offered extra support. They don't like to do the differentiated work set by their teachers, they are sensitive to the teasing and mocking behaviour of their peers. They are, at times, called 'retards' by their peers. (A kids world is unfortunately a very cruel world). Because of the very nature of their disabilities, they find it difficult to make friends. They are very sensitive to being treated differently by adults as well as other

children. They resent this and this further impedes their social cohesion. The problem at times can be aggravated. What is the reaction of mainstream children to the SEN children? There are very few who have the maturity to accept the SEN children. Some of them, and also sometimes their parents, resent the amount of time which teachers need to spend with the SEN children and also the time wasted in managing their disruptive behaviour. Again, the objective of integration within the classroom seems to be difficult to achieve as a real-life case. (This in no way means that there are no friendships between children of different abilities; there are some cases but that's not the norm).

During the course of my work in the school, I have seen a gamut of cases. There have been instances of children finishing their school and going on to apprenticeships or vocational training, a small number also going in for University education. I have also seen a boy venturing out to run a small food business on his own after finishing school. That certainly shows that the policy of Inclusion seems to have achieved its basic objective in some cases. On the other hand, I have also seen boys and girls spending their time in the secondary school without any friends, totally unhappy, and leaving school at the age of 16, without having learnt any skills and not fit to integrate in society.

Their unhappy stint in school makes one think; has the system of Education in the country failed to deliver on its promises? Or were the ideas too lofty and did not really have realistic expectations?

Case Studies

To elucidate these views further, I would like to just discuss a few cases. I have picked these cases up from numerous others, mainly because they bring out the stark contrast in how the same system can work well for some and, at the same time, fail for others.

Case Study 1

Roger Smith (name changed for obvious reasons). Roger had extreme Autism. When Roger entered the secondary school, he was thought to be vulnerable and incapable of managing himself in the school environment. He was given adult support at all times in the school. Roger was even given an adult escort to move around in the school. He had no social skills, could not have any conversation with children or adults. He, however was able to hold his own in most of the academic subjects apart from languages and a few abstract topics. Roger had a special flair for mathematics. He also had a very supportive home environment and parents willing

to overcome all obstacles in providing a fair education for their son. Rapid improvements in his case could be observed as Roger moved up in the school. Today, at the age of 18, Roger is going to finish school, with an offer to study Mathematics at a University. What a proud and happy moment for him and his family! Roger does not have any friends in school but he seems to be happy in himself, and his peers are comfortable with him, and are also able to, at times, share light moments with him. As I know Roger personally, I have seen his entire journey through secondary school, have seen him struggle with other children socially, yet still continue unfazed. Today, when he is about to finish his school journey, can one say, that the education system with its objective of equal opportunities, seems to have delivered in his case? However, one may pause to think; is it the school support, parental hard work, or Roger's innate strength and the fact that he is a fighter, which placed him where he is today?

Case Study 2

The second case (and there are quite a few similar ones) is of a girl, Rebecca Mortimer. Rebecca had extreme learning disabilities, dyslexia, and autism. The complex nature of her needs did not allow her to participate in the normal school environment. She sat with other pupils in the lessons but could not access what the teacher taught. She had an adult support throughout her school life, in understanding the lessons, acting as her scribe during lessons, and during tests/exams. Her only conversation was with the learning support assistants she had in her lessons. She hardly spoke to her peers. Maybe because of a lack of social skills (even though she attended various social skill classes), or maybe because others found her 'odd' and 'weird'. She finished school, sat for her exams, but failed them. When I last heard about her, she was at home, not in a very happy state of mind. Would she have been better off or at least happier in a Special School where the learning process would have been adjusted according to her needs? (However much the mainstream schools and the Government may claim, the mainstream schools do not have the time, resources, or trained staff to manage these issues at their end and, at the same time, look after the needs of other pupils). I still remember Rebecca in her lessons looking quite subdued and unhappy, sitting in a corner, unable to participate with her peers. And yet again, the thought came into my mind, was this school the right place for her? Would she have been happier in a special school where she would see children like her, also struggling with the school work? Maybe it would have given her a better sense of belonging and maybe she would have felt more at ease, because she would not compare with other students, who she saw racing ahead, while she was struggling with the three 'R's. In a special school, her academic achievements (or lack of them) would have been the same but she could have had better self-esteem and hence could have been happier.

Case Study 3

Morgan a visually impaired boy; the vision in one eye had almost gone, and his other eye was also operating at a much lower level than normal. Morgan was also a autistic child. He had attended a local primary school with a lot of intervention (by specialists and behaviour therapists). He came to our school a puny boy, wearing very thick large glasses. He had to sit very close to the classroom board. His work had to be enlarged for him. Sometimes he could not access work because of problems in enlarging certain things. The school was not very happy in enrolling him as they were aware of the problems associated with making him access the curriculum and also the financial burden on the school in providing him suitable resources. But the Law made it mandatory for the school to take him in. Morgan, because of his autism and vision impairment, found it very difficult to adjust in the school. He was accompanied by an adult always, even while walking across the school. It was not safe to let him on his own. This did not allow Morgan to mingle with other students of the school. His autistic behaviour also did not allow him to interact with his peers. The teachers and the school management were sure that Morgan would not fit, and would finally move to a special school, either because of the parents' wishes or the Government deciding that a comprehensive school was not suitable for him. However, our department did not give up on him. The Learning support workers worked closely with him. Morgan got along well with some, and he worked well with them, while on the other hand he would not take to some adults, and refused to cooperate with them. His rapport with his peers and teachers was also erratic. Consequently, his learning journey from Year 7 (when he joined school) to Year 11, was a bumpy ride. He made very few friends. In his lessons, he basically interacted with the adults. However, at the end of Year 11 when he sat for his GCSE, he was able to secure the minimum Grades required to go in for a vocational course in a local college. So was he one of the few successful ones?

Case Study 4

Jacob Walt, a pupil with speech and language difficulties, dyslexia, comprehension, and literacy issues enrolled into the secondary school with a mental level of a five year old. Due to the education system in the UK not detaining anyone at any level, he had reached Secondary school without basic numeracy and literacy competence. He could not write, read, or do basic arithmetic. Consequently, even with adult support, his being able to access the curriculum, which his peers were accessing was nearly impossible. He was aware of it, his teachers, parents, and, most importantly, his peers were aware of it. Socially, Jacob was a very friendly boy. He wanted to make friends with everybody. However, he was able to do so only with boys of his mental ability. Jacob tried to cover his shortcomings many times by

coming up with lies. He made up stories and situations which showed him as a very popular boy within the school and outside. He talked about a very active social life with lots of friends. He also talked about his academic and sports achievement. At times, the fictitious world he created got mixed with the real world and in the end, fact and fiction were so intertwined that he also got totally entangled. The school had to engage a psychologist to help him. But it did make many people wonder if his situation would have been better if he was in a place with similar pupils, so that he did not have to create an imaginary world for himself?

Case Study 5

Alex Harrison, an autistic boy, spent his time in the Secondary school unable to fit in the norms and boundaries created by school rules. He could not access the education imparted within the classroom. Whatever support he was offered by the school authorities failed to do much for him. He was the despair of his teachers and other authorities. He barely passed the GCSE (External examinations at the age of 16). However, after leaving school he was enrolled in a local vocational college, where he learnt Catering and Business. Today, after four years of leaving school, much to the amazement of his teachers, he is in charge of a flourishing business where he sells wraps/sandwiches.

People who had given up on him, are trying to understand what brought about this change? Was it the well-supported education he received with other children which brought him closer to his customers of today? Or was it that, when he left school, he really found his forte (catering and business)? The real answer is anybody's guess. But, certainly, an Autistic boy doing so well in an area where there is a lot of human interaction, is something which cannot be scoffed at.

The case for and against inclusion is not that cut and dried. But, it certainly throws open a few issues and questions. We are all for Inclusion, granting equal rights and opportunities for all with no discrimination. But at what cost? Should it be at the cost of happiness and progress of any child in the school, whether the SEN student or a mainstream student? Would SEN children be better off in a Special School where the staff is better trained for their requirements, where there are more students like them and they are not compared or judged? These children can then experience the social side of the school life where they can 'hang around' with their friends. On the other hand, the case for inclusion is also to make other children aware of a real-life situation where there are people of all types and capabilities, and that they should be sensitive to the needs of others. But is it really fair to them too, to have students who, perhaps, take up a large part of their teachers' time, and also who take up their class time, because those children are finding it difficult to adjust to the class environment and thus the teachers need to give them special attention? Would they not have been happier and progressed better in a class where the teachers were able to give them their fair share of time?

All children are individuals. And they react to different things differently. Some thrive in an environment where others can't. Can we then predict how they would react in any situation? When we talk about inclusive schools vs segregated schools perhaps it would be fair to say that, if the parents of the SEN pupil so feel, their child should have an opportunity to have access to a mainstream school. What happens then if that child is either unable to adjust, and/or faces problems which affect his happiness or progress or the progress of other pupils in his class? Who would then take the decision for shifting him to a special school? Would it be within the purview of the school to decide? Or the child's parents? Or the parents of other children in his class? Whose judgement would be fair and impartial? Isn't it that each party involved has some degree of vested interest? The school may want the child out of their school as it involves a lot of extra work for the staff in the school to manage the pupil. His parents may want the child to continue in that school as they feel that is the right of their child. Parents of other children may feel that, in society's quest to provide equal opportunities, their child's interest is being compromised as the teachers are unable to provide them with the quality of education they could have provided had their time not been impinged on by the management of the SEN pupils. It is very difficult for anybody to take an unbiased decision.

I have looked at a few SEN cases that I have personally seen in my career, but this, however, does not provide a complete picture. Looking at the views of parents of SEN children and also of teachers who work in Inclusive schools is also important. Are we trying to promote an idealistic concept though inclusive schools? Is it something which looks good on paper or does it also have some merit in this practical world?

Parents' Viewpoints

I have personally talked to a few parents who have children in the mainstream school where I work. The cases range from Dyslexia, and Autism, to ADHD. I have changed their names to respect their privacy. Here are a few excerpt from my interactions with them:

Mrs. Patterson: (whose son with Dyslexia goes to a Secondary school).

'I think regular teachers have a tough job so let's don't make it any tougher for them.'

Julia Robertson who has two children in the school, Katie and Linda. Linda is a physically challenged child while Katie is a perfectly normal, healthy child. Her words: 'Linda started the mainstream school last year. the academic ability spread in her classes was already beyond the ability of the teacher to manage.

I believe that full inclusion of a handicapped child would deny both the child and the teacher the ability to fully celebrate their abilities the teacher's time in the classroom would either be infringed upon to the degree that the development of the so-called normal child would suffer; or the other children would not be able to develop to their fullest. I am totally against integration for both my "normal" child and Linda. Linda would not benefit at all

from being in a class with “normal children ... I also would not want a “severely disabled” child in my “normal” daughter’s room, as I feel that the child would distract the classroom.’

Mrs. James words: ‘... As the kids get older the difference becomes more obvious. As the curriculum gets more difficult, our kids get lost. Our kids need repetitive information and very simple instruction. My son at 16, needs more living skills than academic. He would hate to sit all day listening and understanding very little and remembering nothing.

... he would not receive the education he needs. I do not think it would be possible to adapt the materials and lessons of history, math, etc. to John’s needs.’

... he also requires the skills being taught in the special education programs. His special education program provides the help he needs in so many areas, I would not want him to miss.’

Another parent felt: ‘I feel that, by and large, the special education student would be missing out on a lot of what is important for him educationally ... As they continue educationally, won’t they fall further and further behind?’

I have strong concerns about how these kids’ needs can be met. I am providing my ‘normal’ child with several hours a week of tutoring because our classroom teacher cannot provide what this child needs. How on earth could she provide for my children with ‘real disabilities?’

Rebecca Williams felt: ‘My son is Autistic and we believe he needs some time in a structured environment so he can sort out the extra stimulation of a regular classroom. Our experience with William had been that even when placed in a classroom with students of moderate delay, he developed behaviour reflecting frustration with not being able to keep up ... The benefit of appropriate behaviour models is far outweighed by the disadvantages.

I feel the regular activities and noise would interfere with the one to one instruction and attention she receives now in her special education class.

Disabled children need to be around other people with disabilities in order not to feel isolated ...

... he would not be happy in a regular classroom. He cannot talk or do anything for himself, but is aware of what goes on in his surroundings, and is sensitive to other’s actions. He appears relaxed and content with the other severely disabled students in his class, but around non-disabled, seems to be tense and withdrawn.

Personally, I think it is cruel to put him and others like him among students who are not disabled. Severely disabled persons seem to have a communication with each other, without talking or seeing, that no one else can.’

A father (Rob Buck) felt ‘It has been my observation ... that special needs children often feel more comfortable with other students of similar needs. Being more similar in developmental levels, they tend to enjoy similar types of activities and play.

I have two children with disabilities; this survey is about one. He is uncomfortable around other children and in close spaces. He expresses dislikes of normal students. He is also disliked by them and they tell me about his behaviour when I’m on campus. Mainstreaming to a large extent would not do anyone service in his case.

My other son has been fully and successfully mainstreamed for years. I know the downfalls. I know the up side. I consider mainstreaming as something that must be decided on a case-by-case basis. Like any other fad, it is being evangelized as a cure-all. It isn’t. It is terrific in some cases. In others, it is child abuse.’

Words from parents are perhaps something which give a deep insight into what really the SEN children face when they are put in Inclusive schools. The children themselves, though normally very sensitive, may not be able to put across their views/emotions as well as their parents perhaps. There are cases discussed here where the child has thrived in the stimulating environment of a mainstream schools, whereas, in a number of cases, it has been the total opposite. The child has had a negative experience while at the same time maybe missing out on something he could have maybe gained in a special school tailored to his needs/requirements. However, it is still difficult to come to such a conclusion as the cases may vary according to each child's specific needs; and it is still difficult to say what could have happened if the child had been sent on a different path.

Written comments by 140 parents of students with severe disabilities (In the United States of America) were analyzed to identify reasons why they are supportive of, or resistive to, inclusive education programming. The article was published in a journal "Exceptional children" published by Council for Exceptional Children. Date: Summer 2001 Source Volume: 67 Source Issue: 4.

Publication: Name; Exceptional Children Publisher: Council for Exceptional Children Audience: Academic; Professional Format: Magazine/Journal.

A review of findings (Palmer et al. 2001) shows that parent statements in support of inclusion mainly involved beliefs that the child would learn more due to higher expectations, or a more stimulating or challenging environment, or cited the benefits to general education students of being exposed to students with disabilities.

Parents who opposed inclusion wrote statements largely indicating beliefs that the severity of their children's disabilities precluded them from benefiting from such programs, or that the general education classroom program would not be accommodating or welcoming of their children. In fact, seven of the ten categories of "Statements Reflecting Reasons Parents Are Not Supportive of Inclusion" had to do with negative perceptions of general education classrooms or beliefs that children with disabilities would overburden the teachers or students in these programs. Considering this finding, it may be true that views regarding inclusion are often related to perceptions of the general education system itself.

Negative reactions held by some may be, in part, a backlash from those who feel that the philosophy or ideals of inclusion have been imposed on their community without their consent or input. In fact, from early on, the inclusion movement has been criticized for being promoted by those who view themselves as an elite set of special education advocates who have left those most impacted by the movement out of the debate. Parents who are making important decisions, with regard to what is best for their child are unlikely to be influenced by what may be perceived as social or educational experimentation, with their child's well-being at stake. Rather, these decisions are likely to be based on a contemplative and subjective evaluation of a specific child's attributes, circumstances, and needs.

The Significance of Teachers' Perceptions of Inclusive Education

Teachers are perceived to be integral to the implementation of inclusive education (Haskell 2000). Research communicates the view that teachers are the key to the success of inclusionary programs (Cant 1994), as they are viewed as lynchpins in the process of including students with disabilities into regular classes (Stewart 1983). Other studies acknowledge that inclusive education can only be successful if teachers are part of the team driving this process (Horne 1983; Malone et al. 2001).

It is important to examine the attitudes of mainstream educators toward the inclusion of students with disabilities into regular settings as their perceptions may influence their behaviour toward and acceptance of such students (Hammond and Ingalls 2003; Sideridis and Chandler 1996; Van Reusen et al. 2001). The success of an inclusionary program may be at risk if regular classroom teachers hold negative perceptions toward the inclusion of students with disabilities (Horne 1983; Van Reusen et al. 2001). Negative perceptions of inclusive education may become obstacles, as general education teachers attempt to include students with disabilities (Cawley et al. 2002).

The following section presents an investigation of some of the factors that may influence a teacher's attitude toward the inclusion of students with disabilities into mainstream settings.

Factors Influencing Teachers' Attitudes Toward Inclusive Education

While some studies point out that teachers' attitudes to inclusive education are typically positive, (Avramidis et al. 2000; Kuester 2000; Schmelkin 1981), other studies reveal that teachers' attitudes may be influenced by the disquiet they experience regarding the impact such a process will have on their time and skills (Avramidis et al. 2000). The discussion that follows considers some of the factors raised by previous research, which may have influenced teachers' attitudes toward the inclusion of students with disabilities into mainstream classes.

A study on the role of teachers in Inclusive Education (2005, Attitudes toward the Implementation of Inclusive Education).

The study attempted to investigate the attitudes of mainstream teachers toward the philosophy of inclusive education. Results suggest that teachers in Victorian schools generally hold positive attitudes toward the inclusion of students with disabilities into mainstream settings. These positive views may be attributable to an increase in the awareness of students with disabilities among the respondents, possibly due to renewed efforts by the Department of Education, Victoria, to educate teaching personnel regarding their roles as inclusive educators.

It is evident that the inclusion of students with disabilities into regular classrooms is additionally viewed as nurturing increased feelings of tolerance and respect among all participants within the inclusive setting. However, a student's level of disability may emerge as a factor shaping the attitudes of teachers to the inclusion of students with disabilities. Respondents were also strong in their expression of a need for more information, knowledge, and expertise in their attempts to include students with disabilities into mainstream classrooms.

Respondents who had members of their family with a disability, and who had worked closely with people with disabilities, appear to have heightened awareness when it came to including students with disabilities into the regular classroom. Further, the responses of participants revealed that previous experience with including students with disabilities into regular settings appears to better prepare teachers for inclusion. Bearing these views in mind, it would appear prudent that a mandatory segment on teaching within inclusive settings be introduced into teacher training programs to prepare trainee teachers for their roles as inclusive educators.

The findings of this study should be interpreted in the light of the following limitations. The findings were largely based on self-reports by mainstream teachers; there will always be some doubt as to whether teachers' responses reflect their true attitudes and concerns regarding the inclusion of students with disabilities into mainstream settings. Responses should therefore be interpreted with caution. This study only investigated a limited number of variables related to the attitudes and concerns of mainstream educators, regarding the inclusion of students with disabilities into their classrooms. There are undoubtedly other variables that should be considered, when ascertaining such attitudes and concerns. The influence of factors, such as those relating to systemic supports including school culture, language, and geographic location have not been considered. Future investigations may consider the influence of these variables on teacher attitude and concern about inclusive education.

One article, *A Survey of General and Special Education Teachers' Perceptions and In-service Needs Concerning Inclusion*, examines factors that contribute to teachers' ability to meet the educational needs of students with disabilities within inclusive settings. This study explores teachers' perceptions towards inclusion and their needs for supports and resources to successfully implement an inclusive setting.

Overall, all the teachers expressed that they are in need of support, which they do not have, to successfully integrate a student with disabilities into the general education classroom. Of the general education teachers, 79% reported not having adequate class size, 78% needed in-service training, and 73% report needing, but not having time, to meet with families. Forty-nine percent of the special education teachers reported they needed, but did not have appropriate class-size, and 48% reported that they needed in-service workshops with the general education teachers. The only areas that teachers reported that their needs were being met were in the areas of receiving support from the principal and teaming with a specialist.

General education teachers have differing views about the inclusion of students with disabilities in Mainstream classrooms. However, the type and severity of the children's disabilities affect teachers' willingness to accommodate certain students and their confidence that they will effectively manage their classroom. It has been reported that teachers have expressed concerns about having students with autism and emotional behavioural disorder in the general education setting, because of the children's lack of social skills, behavioural outbursts, modifications made to the curriculum, and lack of training and supports. Many instructors do not believe they are able to teach these populations effectively while simultaneously teaching a large group of typically developing students. The questions posed here have no easy solutions. Having worked very closely with SEN pupils, I also cannot say that there can be one solution for all cases.

However, I can only suggest that more grassroots-level research needs to be done, especially to find out how the SEN children fare later in life. Does receiving mainstream education allow and empower them to be well adjusted and useful members of the society?

We aim to have an educational system where "Each Child Matters". As we are talking about human beings, we cannot work in a straight-jacketed way with idealistic theories. Maybe we need to be flexible towards finding a solution for all our children, who all deserve a fair and just educational system with equal opportunities and resources at their disposal. An educational system which is fair to all (as much as possible) also leads the way to a society where everybody can live in cohesion, celebrating each other's differences. So we, as Educationists, must strive toward a better future for all. The task to provide an equal opportunities education for all, is difficult but certainly not impossible! "The very process of living together educates" (Dewey 1916, p. 6). A system of Inclusion benefits not only the SEN pupils, it is also for the good of other mainstream children. They also learn to live with all types of pupils. Children learn a very important lesson of life very early on in Inclusive schools: to appreciate differences and to develop a culture of concern for others. It may sound like a Utopian concept. but, we cannot be disheartened by the difficulties in our quest for a fair and just society for all. In the poet Longfellow's words:

Let us, then, be up and doing,
 With a heart for any fate;
 Still achieving, still pursuing,
 Learn to labour and to wait.

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Chapter 19

The Blended Classroom in Language Teaching: A Perspective on the Significance of Technology



Swati Sehgal

Introduction

The preliminary engagement in this chapter will be a deliberation upon what the term ‘blended’, signifies when a specific reference is made to information and communication technology in a language classroom. The central thrust of the paper will be on how technological inputs can be assimilated in order to generate conducive conditions of language learning. Also seminal is the presence of the internet; a heterogeneous linguistic medium, with the propensity to offer a plethora of opportunities for generating meaningful communicative encounters in the classroom (Crystal 2014).

The contemporary context of continuous transformation, where technological resources are being integrated in diverse contexts guides the need for engaging with this topic. Another factor regarding the same is the persistent emphasis being made, globally, on use of ICT in classrooms. Citing the ease and interest it generates for the student, claims are made that the potential of ICT is enormous and is increasing day by day. Stakeholders in education are recognizing this influx and are attempting to create a milieu where there is consistent interactive space made possible via technological inputs.

The chapter begins with an exploration of what is implied by the phrase ‘blending technology’ in the classroom. Subsequently, to elaborate on the intersection of language and technology, there is a brief engagement with how technology modifies the use of language in everyday experiences. Drawing from this broader context, the shift is made to the specific context of the classroom or the school. This constitutes the next section of the chapter. The focus here is on two aspects: technologically available knowledges and technology as a resource in the classroom. This section also dwells upon the role of the teacher, because, when a

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reference is made to blended classroom a significant concern that emerges is the participation/facilitation of the teacher in creating this environment. What attempts the teacher is making to realize this potential, and the nature of challenges faced, are the key areas of concern here. It draws from available research and field-based enquiry. An attempt has been made to look at how the incremental increase in the incorporation of technological inputs has a bearing on pedagogical practices. Amongst other concerns, this is an additional learning that the teacher has to engage with and it is significant to get the teacher's response to this situational matrix. Keeping this in view, perspectives from the field have been included, comprising teachers whose pedagogy has been mediated by the use of technological inputs. This constitutes the third section of the chapter followed by a conclusion reiterating the need for a more wholesome presence of technology in classrooms.

Blending Technology 'in' the Classroom

The word 'blend' denotes merging/mixing together and the connotation can be conveniently extended to suggest being in synchronization and in harmony. When juxtaposed with the idea of technology in the classroom, the use of this term calls into consideration crucial factors that need to be acknowledged while incorporating technology in academic spaces. These include appropriacy, clarity regarding the purpose that is sought to be fulfilled through means of the technological inputs, and the factors of sustainability and viability. These are crucial because they function as the fundamental building blocks for generating a facilitative learning environment.

'Blending' as a term in context of the classroom must necessarily be differentiated from the commonly referred nomenclature of 'including' technology in the classroom. The former term incorporates aspects of integrating technology more comprehensively and adapting its presence according to the needs of the requirements of the context. The differentiation is to bring to the fore the idea that technological inputs cannot be imposed merely as an external resource; it points to the concern that the use of technology is a socially determined act (Windschitl and Sahl 2002). By this the implication is that the motivation and the process of using technological input is not a mechanistic process; rather it is driven and shaped by the several variables that are contextually factored in (Windschitl and Sahl 2002).

Incorporated within the same is the perspective that the use of the technological resource is structured by the larger question of 'what is education', perceived variedly by various stakeholders in the process: the school, the teacher, the parent. It implies that there are manifold aspects that characterize the nature of engagement with a technological input in the classroom, and these are way beyond the ambit of mere logistical concerns. Thus, there is a sociocultural perspective that must be associatively dealt with when technology is seen as a constituent of the classroom. This aspect not only has a bearing upon the relevance of the content but it also affects how the input is processed.

Language and Technology: Everyday Interaction

The everyday is characterized by several unique, random, and structured encounters with language. The interface of language and technology is interesting here as are its pros and cons. Crystal (2014) in the book *Language and the Internet* laments the relaxed standards of language that we encounter everyday, quite often being outcomes of the influx of the technological inputs. He elaborates that this does not often augur well for the language. The intent here is to bring to the forefront the dissolution of the very distinctive character of language as a communicative tool. This argument is in complete contrast to another point of view which is that of language being enriched in newer/unique interactional spaces. Not satisfied with the assumption of a position of intellectual superiority or hegemonized structuring of the universe of language, the conscious attempt here is to simply highlight that when we talk gloriously of the expansion of the possibilities of language through technological advancements we cannot, at the same time, neglect the deleterious impact that it may have. This is to say that harbouring a narrow conceptualization of the interface between technology and language, being unmindful and oblivious of the impact of the technological inputs in the wider sense, is a concern that needs to be deliberated upon.

What is interesting is that Crystal (2014) talks about the idiosyncratic usages of language, giving the example that a lot about the writing experience develops in scenarios where writing experiences are not seen as part of the formal structure of the classroom. They are traditionally seen as the part of informal writing tasks which are not worthy of being included in the classroom and are seen as to be outside this ambit. These too are often technologically mediated. Learning here is an enabling factor that feeds into the literacy experience. It points at twin aspects: firstly, technology cannot be only looked at as technology-in-the-classroom, because it narrows down the ambit; and secondly, every interactive space generated via technology might not be purposeful for a language classroom.

Technologically Available Knowledges

In the context of technology in the classroom, it is important to consider that one cannot proceed with the assumption that there are zones of isolation or exclusivity existent, with respect to the exposure to technological spaces. This is an important observation in light of the globalized, virtually concretized, world that has become a part of our daily interactions. Also relevant is the consideration that technologically available knowledges participate in the classroom in the physical absence of technological inputs too. The social world is no longer only limited to the physical world; its ambit is now vast and extends way beyond the physical. This is an essential consideration in doing away with the polar view of presence or absence of technology in the classroom. This traditional view is limited in the sense that,

whatever the social situation—the class, the playground, the school-gate, the staff room or other spaces of the school—there is an influx of technology. It is clearly evident from the nature of interactions in and around the sphere of today's classrooms. Why this perspective has been discussed here is because it helps one move away from fixed views of participation of technology in the classroom. It helps address barriers to understanding the ways in which the dimensions and scope can be expansively considered. If looked at from a holistic perspective then there are a lot of authentic resources that can be accessed by the via media of technology. It provides opportunities to address literacy concerns in novel ways, opening up a plethora of avenues for the learners for exploration.

Given the fact that there is a burgeoning use of computer technologies that encompasses the students' everyday life, the use of this as a resource within the classroom cannot be disregarded. Agee et al. (2009) in their study on 'how students used and conceptualized computer technologies as part of their literacy practices and everyday lives' (364) point out that the use of technology by students in everyday lives outpaces its use in the classroom (363). They present the argument that it is a vital part of the daily literacy practices of the children, both in terms of providing access and becoming a means. Immersion or situatedness of the learner in this milieu cannot be ignored as it has transformed the ways of approaching and building literacy competencies.

However, this is not to insist that technology may be regarded as the dominant literacy practice, discounting the context and the role of other viable resources. Acknowledging that the classroom can draw upon a range of literacy encounters that children have on everyday basis, emerging from varied sources, a nuanced approach to the role of technology is required. The need is to recognize that technology as a mediator enables 'specific forms of participation' (Lave and Wenger 1991, as cited in Agee et al. 2009). This calls for a more contextually informed approach to blending technology in the classroom. A corollary to the same is the concern that technology does not always participate in visibly manifest forms in the learning of language.

Technology: A Resource

A Casual Conduit or a Resource

Acknowledging the need for generating an engaging learning environment, one of the classroom goals should be multiple and multi-faceted resource utilization and its adaptation. It is pertinent to consider that technology is not merely dealt with as an added superficial element, as a break from the staticity of the curriculum, or peripheral to the classroom process. Rather, the requirement is that of exploring the need and potential in a wholesome manner. Researchers dwelling on this concern have articulated it as a complex process where adequate time is required for

developing commitment and competence. The attitudinal initiative to encourage the use of technological inputs, doing away with mistrust and overreliance, are equally essential.

Another dimension that affects the significance of technology is the perception of the participant about technology, fluctuating on the spectrum of being a resource to that of being a casual conduit, or superficial accessory. A more holistic engagement requires taking into consideration several aspects of the participation of technology in the classroom. The central thrust here is also to argue that the resource should not be viewed as a 'self-contained' teaching system, but instead should be used/adapted to create authentic materials and tasks for the learners.

This points at the need for discernment, with respect to, firstly, how technology is referred to with regard to the dynamics of the classroom and, secondly, how it needs to be viewed critically taking into consideration the learner's socio-cultural milieu. Warschauer (2002), analyzing the use of technology by teachers, elaborated upon the concerns of autonomy and innovation. Highlighting the nature of responsibility involved in the selection process, the researcher states that an awareness of the materials accessible by means of the technology is not enough. It requires not only 'knowing' but also the ability to critically locate the relevance. Warschauer (1999, as quoted in Kern 2006) cautions against constructs which locate technology, primarily computers, as an addendum to learning. The argument built in is that the use of technology must not be viewed as a special case phenomena for a language classroom. It is articulated that this medium is not a 'technology' that needs to be distinguished from other 'technologies' of the classroom, such as a pen. An associated concern is that of challenging the perception of technology as a culturally neutral tool. For integration of technology, the requirement is to recognize that it is not merely a device, such as a desktop or a laptop, but an ethos which, in multiple forms, participates in the learner's milieu.

Technology: A Substitute

Wrigley (1993) cautions against the possibility of how the conceptualization or the designing of the resources using technology may become redundant and counterpose good teaching practise. Dwelling upon this concern, it is stated that the use of technology does not imply substitution or replacement; rather it should be a conduit for sound language education. Also critical to consider here is the access to pre-created software which is often based on a very narrow skill-based definition of literacy "ignor(ing) the social aspects of learning and reduc(ing) literacy to a series of discrete chunks to be mastered before any kind of natural reading and writing can take place" (Wrigley 1993, 321). Of the several possibilities that can incorporate the use of technology, three distinct and authentic purposes of linking language and technology (Wrigley 1993) that form the basis for exploring the need for technology could be:

- Using visual resources to provide a context, that is using the authentic video resources as a springboard for exploring language use in varied contexts and also by means of learners creating their own video productions
- Using technology to facilitate literacy tasks, which refers to the use of software in order to facilitate the creation of learner generated texts
- Promoting opportunities for communication and interaction where learners negotiate and discover aspects about language use (spelling, pronunciation) in forms negotiated by technology.

(Wrigley 1993, 319)

Teacher/Student as Creator

By the means of web resources and technological inputs the teacher as well as the student has access to a global repository of ideas, which can be adapted or tailored according to the needs and requirements of individual learners. With the aforementioned concern that the learner in the classroom has access to these resources both in the presence and the absence of the teacher it is somewhat enabling with respect to how it accords responsibility to the learner, envisioning the teacher's role as a facilitator. Pertinent to recognize here are the unique contexts that such environs offer.

An associated concern here is that it requires constant negotiation to develop an attitude towards technology. One cannot see it from a simplistic and unidimensional view. Windschitl and Sahl (2002) highlight the importance of delving into the social matrix of the institutional structure that the teacher is located within in order to understand the attitude towards technology. In relation to this idea is the concern that the integration of technology in the classroom is a gradual and sustained process. There are inhibitions, dilemmas, and expectations that need to be catered to in this journey.

Windschitl and Sahl quote the case of research conducted on ACOT (Apple Computers in the Classroom) where researchers have designated stages of technology integration, taking the graded approach as the basis. The stages range from entry level to that of invention where "teachers are capable of creating fundamentally different learning environments in their classrooms through the use of technology" (2002, 167). The appreciation of this approach is complemented by issues which are seminal to the understanding of technology in the classroom. Firstly, it is to be acknowledged that the process is not linear in nature; and, secondly, there are "undefined influences" that structure the perspective and ways of approaching technology (2002, 168). In the use of technology, due consideration must be accorded to how the process needs to be individualized and contextualized.

To reiterate, technology might be helpful in generating a scope for the teacher as a creator. That is to say, this may be a way of encouraging the teacher to explore the various means through which she can deal with a specific topic. This also hints at

the probability of creating a space that extends beyond the textbook. It may link to the textbook in creative ways and it may help in extending the boundaries of what curriculum means. Also, it opens the space for bringing different texts to the class in a cost-effective manner. For instance, when a reference is made to reading and writing especially, constant emphasis is placed on the role of structures of texts on understanding the audience and the purpose of writing and the reading process. Such initiatives could help in bringing to the class/initiate various textual encounters that are imperative for learning language.

Technology: A Means to Learning the Language or Vice Versa

Warschauer (2002) points at this strange collusion of the hegemonic presence of English language, and technology, as a *via media* to register this presence. “Technology in English language teaching is now less about using computers as tools to teach English effectively and more about teaching English to help people use computers” (Kern 2006, 197). This mutation of the purpose of technology is significant here. It demonstrates how the operational elements of the resource gain prominence over exploration of the language through the resource. It is important as it requires the teacher using technology as a resource, to remain mindful of the objectives and purposes. The balance needs to be maintained so that the emphasis does not shift on the learning of the use of ICT, rather than the language.

Language and the Internet

The pedagogic possibilities that e-resources and the Internet offer in the classroom is another aspect that needs to be considered. The requirement here is to recognize and optimally utilize the potential of the internet with its ever-expanding zones of access. Although it may appear to be far-fetched there can be ways and means which can be explored to create networks of language users across geographically diverse terrains. This may facilitate in creating generative possibilities for languages to interact, thus creating possibilities where the technological input acts as an enabling medium, to bring to the fore the understanding that languages speak to each other, and are overlapping in nature; that is, having visual, auditory and semantic similarities.

Another facet of the same is that technology, if resourcefully explored, can bring about an effective change in the idea of language as violence, and language hierarchies. The example of the mobile phone is significant here. The spread of the mobile phone as a device in the global milieu is unprecedented. The numbers burgeoned even further when all the operational inputs were made available to the user in a

preferred language. Companies strategically thrived and increased profits manifold as the phones had the capability of inputs that could be selected on the basis of the user's language preference. And this how exactly the ubiquitous Google functions: personalizing usage as per the requirements of the interaction, making it convenient and contextualized. This clarifies the above point that, knowing the linguistic diversity, meaningful reliance upon the technologies is a way out. One may empathize with the position of a teacher and student who cannot partake of each other's meaning because of the variance in the languages used. This is not an uncommon occurrence. Rather, it is a grim reality where the teacher may not be well-versed, or be aware of the linguistic diversity of the classroom he/she encounters. This is not to say that using technological inputs is the necessary solution or a mandate. The point being emphasized is that it could open up windows of opportunity and create avenues of knowing. The internet, with its burgeoning access-culture, can thus be a space for making feasible a guided critical exploration where the learner observes and generates meanings for himself or herself, without being granted access to it only through the legitimization of the teacher in the classroom.

Thus, the overall idea is that the proactive and sufficiently well-thought-out use, or blending in, of technology can bring about change that traverses the boundaries of what is prescribed. Immensely important in this frame is the idea that what is to be incorporated, by means of the technological input, does not remain a reproduction of what is there within the textbook.

Voices from the Field

Taking the aforementioned concerns into consideration, this section seeks to delve into teachers' experiences of engagement with technology in classrooms. The attempt here is not to look for patterns or similarities but to acknowledge the uniqueness of pedagogic spaces. The collection of data was a technologically mediated exercise—through the use of Google forms—followed by sharing of anecdotes by the respondents from their classrooms. 30 teachers were randomly contacted with a preliminary concern about the use of technology in the schools or their specific classes.

Differentiating the use of a technology in an isolated manner and ascribing the efficacy of technology, unmindful of the factors that are contextually emergent, was another concern while collating data and while analyzing the responses. It was carefully considered that responses are not limited to only giving decisive statements but also substantiating with everyday classroom experiences that provide insight into the dynamics of the language classroom.

The respondents are primarily from urban private schools within the NCR and have varied levels of teaching experience at the primary, middle school, and at the senior secondary levels. All the respondents are language teachers, specifically teaching English language. With regard to the class composition, each teacher has an interaction span of around 30–40 min with a single class (and there are several

sections of one class in the schools where the respondents teach). The classroom composition is such that there are students ranging from 35 to 50 in every section. Each classroom has identifiably different access to computers. In a few classes, Smartboards are installed, while in others laptops have been provided to the teachers, or the teachers have access to computer labs within the school. The teachers have varying levels of experience of teaching in school, that ranges from 1 to 35 years. If a comparison is made between the years of teaching experience, and the number of years the teachers have been using information and communication technologies in their classroom in particular, then it is observable that the use of ICT has been more prolific in the past decade.

Evident from the data gathered was the fact that the usage of technology has found headway in classrooms. One consideration of the same could be that this was because the respondents were placed primarily within the urban context. However, acknowledging the diversity of the contexts that are made available within a singular urban location, a visible difference was evident in the nature of engagements with technology and the challenges encountered therein. The nature of responses ranged from 'frequently' to 'very frequently' for the extent to which teachers used internet and technology associated resources, in the classroom for language teaching/literacy instruction. Amongst the thirty respondents from whom the data was collected, six mentioned that the utilization of technology related resources was 'very frequent' for their classrooms (Fig. 19.1).

Purposes for Using Technology

In this section of the chapter, the engagement will be centred upon the purposes for which ICT was used in the language classrooms by the respondents. The intent of

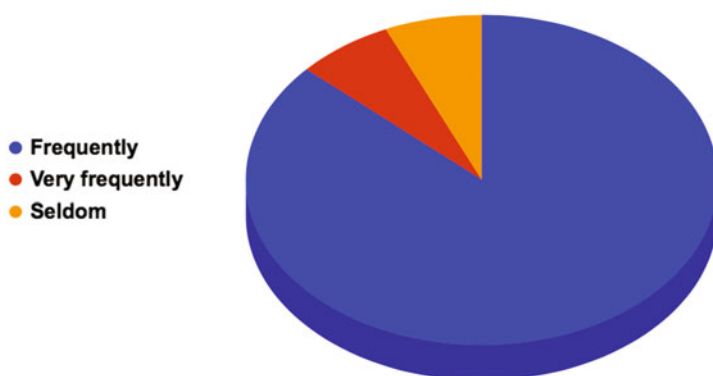


Fig. 19.1 Frequency of the use of internet and technology mediated resources in classroom

Table 19.1 Purposes for which internet and technology is used in classroom

• Showing a video related to the lesson
• As an aid to the teaching of the lesson
• Taking up topics related to grammar
• Design worksheets for the students (several respondents shared this view)
• Introducing specific vocabulary from the text
• Showing pictures for the purpose of story narration and clarifying vocabulary
• Showing videos related to the unit/theme taken in the classroom/Showing audio-visual resources (several respondents shared this view)
• For the purpose of initiation of a story/poem/topic
• Generating engagement with the text and providing additional information regarding the unit
• Assessing comprehension
• Ascertaining teaching-learning gaps
• Addressing spelling and pronunciation
• Recapitulation
• As an extension to the classroom
• Concretizing and explaining abstract content
• Enriching the content
• Showing a presentation pertaining to a topic (several respondents shared this view)
• Framing answers to questions

asking this question was to explore how technology was being integrated in the classrooms. From the data gathered, one aspect was visibly evident that there is no singular way in which resources available on internet and technology mediate the teaching-learning process. Its dependence on the classroom dynamics, the resources available, goals of language teaching, and the teacher's expectations, cannot be discounted. There is no singular feature that characterizes the responses, illustrating that the ways in which the use of internet and technology is conceptualized, varies. The following table provides a brief insight into the responses received (Table 19.1).

One fundamental aspect, apparent from these responses, is that technology does not figure in the classrooms as an additional or an added input. The purposes (as mentioned above) demonstrate that the employment of technology as a resource is not superficial in nature. It is seen as a necessary part of the pedagogy. The practises are indicative of the fact that the use of technology as a medium is explored at various junctures. The range of relevance is articulated in terms of initiation of a lesson/unit/story and carries forth to the processes of assessment.

Another noticeable facet of the same is that there is a nuanced approach towards the blending of technology. For instance, it was mentioned by several respondents (around 60%) that the visual impact of e-resources is immensely beneficial in

concretely presenting aspects of language to the students. It is quite interesting that the teachers articulated the importance, in terms of looking at technology as an enabling mechanism to reflect upon the ways of classroom interaction. This observation, in further verbal explanation was stated by one teacher in terms of an example from a story narrated by the teacher with the help of pictures and a video (used intermittently). This particular respondent, having taught language at the primary level for a span of 35 years, stated that the use of such resources generated a lot of language in the classroom, and the questions asked pertaining to the pictures and videos helped in building the momentum of the narration. In the course of the discussion, it was stated that not only did images and videos facilitate literal comprehension, but also helped students analytically scrutinize events of the story and present their perspective about a story. It needs to be acknowledged here that the response cannot be assigned to sheer presence of a resource, but it certainly does highlight how the resource was incorporated in the classroom transaction. It certainly can be stated that it helped in establishing the context of the content with more specificity, and provided a scope to extend beyond moribund presentations of literature in the classroom.

Further, in an example stated by one of the respondents, it was specifically pointed out that explanation, demonstration, and recapitulation of grammar related aspects was a key component where the use of technology was incorporated. The benefit of a technology enabled classroom was stated in terms of how it helped in reaching out to a wider resource pool of teachers, which enabled in bringing in innovative ideas for teaching-learning. In the anecdotal accounts given by the respondents, one observation that was manifest was that, though the teachers found the use initially challenging, yet they displayed a sense of satisfaction about how it helped in reaching out; that is, it generated zones of access and interaction with students from an academic perspective. One respondent while describing the same concern stated that she used Google forms as a means in order to conduct brief assessment activities and gather feedback from the students. It raises the concern of feasibility of access to computers; nevertheless it is appreciably a novel way designed to gather responses and is an initiative to connect with the learners. Besides using available software for classroom teaching, the respondents also mentioned specific software utilized in teaching language. The differentiation here was drawn on the basis of the purpose with which softwares are developed. While an example of the former is Microsoft Word, and Powerpoint, as mechanisms and mediums, the latter included examples such as Tata ClassEdge,¹ which focuses upon empowering through technology.

The use of multimedia was also stated as beneficial. While giving an example, one of the respondents stated that the use of YouTube was a regular feature in her language classes. In the data collected, a commonality that was seen was the usage of multimedia available on the internet as a resource. However, no example surfaced where the student himself/herself was the author or creator of the media.

¹<https://www.tataclassedge.com/digital-classrooms-teach/learning-experiences/>.

Kern (2006) in the paper ‘Perpectives on Technology in Learning and Teaching Languages’ designates multimedia as a feature of electronic literacy. Kress’s (2003) description of multimodal texts is illustrative of the potential in the classroom.

... multimodal texts as “texts made up of elements of modes which are based on different logics”, that is, texts that integrate writing, speech, images, color, sound, animation, and that therefore combine logics of time and space (as quoted in Kern 2006, 197)

Kern (2006) gives the example of digital storytelling which provides the flexibility of incorporating several genres and forms and provides a platform to the learner as author. This, he states may not be directly correlated to a language learning forum, but at the least one can designate it as a means of providing exploration of language in an innovative and creative way. Something similar is an initiative by the publisher Pratham called Storyweaver, a digital platform that gives access to readers to a vast number of illustrated stories in several languages. It not only enables the reading of stories, but also allows authoring; it offers a platform where anyone can create a story (with the platform providing images and several language options to choose from) and publish it on the website for readers.

Evident from the examples stated was that information and communication technologies are not seen as overbearing in the teaching and learning process. However, the teachers stated challenges in the use of resources. A few of them were concerns pertaining to technical concerns, support and maintenance issues (Table 19.2).

A few respondents mentioned concerns of using ICT in the classroom in terms of the conflict generated when the curricular timelines were not addressed. This points at a dichotomy where the use of technology is not seen as a relevant curricular requirement. Also, it hints at the possibility that what is mediated by means of technology could be dealt otherwise and it is assumed to have no bearing on the language classroom milieu. This is clearly indicative of two things: the perpetual issue of the syllabus being given priority over language generation and equipping the learners with skills for exploring language; and superficial deployment of ICT.

In addition, around 60% of the respondents mentioned concerns about the availability of contextually relevant resources. This foregrounds the concern highlighted in the preliminary section of the chapter: the importance of developing content which is relevant for the classroom. The concern is articulated in the

Table 19.2 Challenges faced in the use of technological resources

• Conflict in coordination
• Availability of internet
• Technical support from the institution
• Difficulty of access
• Smart board not working properly

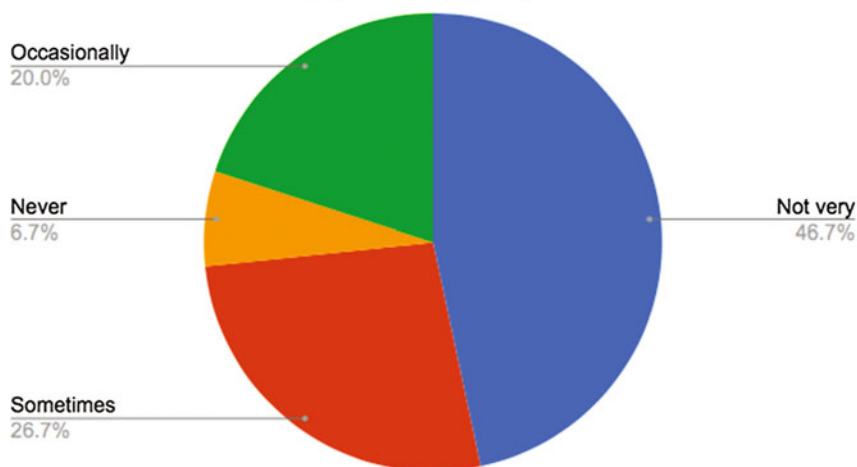
To what extent it is challenging to use technological inputs in classroom

Fig. 19.2 Extent to which respondents find it challenging to use technological inputs in classroom

following vignette: ‘I have to do research as lot of resources are available. Then I have to compare and select the best things from all and put them in suitable formats bringing it to the level of students and bring it to class on smart boards. Sometimes the smartboard system doesn’t support the file which is uploaded. Sometimes I am unable to understand why the system had shut down on its own or why the data could not be saved.’ and ‘It is really challenging to find appropriate content based links’ (Fig. 19.2).

Other associated concerns were that, while presentations were made, excessive written content cannot be included and thus it has to be suitably altered. Another challenge was that of content appropriacy, as one of the respondents stated that they had to be careful of cyber safety issues, taking into consideration the content available on the internet. Gruba and Hinkelman (2012) also point at such associative factors that mar the progress of the idea of technology being integrated in the classrooms. These are concerns whose validity across a spectrum of contexts is undeniably strong. One of these factors mentioned by the respondents, as well as Gruba and Hinkelman, is the scalability factor; the presence of adequate institutional resources. Further, they state that the challenge to blending technology, apart from other pertinent concerns, cannot be distanced from the complex institutional environments where a wide range of factors, policies, and personalities, influence the paths to adoption of technologies (Gruba and Hinkelman 2012, xiv). A way out is building ‘communities of innovation’ (Martin-Kniep 2008, as quoted in Gruba and Hinkelman 2012).

Conclusion

It is evident that with the coming of technologies, literacy is taking different forms. The technological environment is providing different, and uniquely charted-out, paths which are filled with enthusiasm for a positive and enabling outcome, and yet mired in the scepticism and sense of mistrust about the outreach of technology, in relation to traditional pedagogies of reading and writing. Bruce (2002) deliberates the question of the stance towards technology, stating that the spectrum of responses towards technology which range from negation, looking at technology as a tool, to those which acknowledge technology as transformational have a commonality in terms of a basic underlying assumption: “(t)hey each construct ‘technology’ and ‘literacy’ as distinct realms” (180).

Bruce says, “Technologies participate intimately in the construction of all literacy practices. They are not separate from texts and meaning making, but rather are part of how we enact texts and make meaning” (304). Thus, the moot point articulated here, and of immense significance, is that literacy and technology share a reflexive relation, and technology cannot be seen just as a physical presence which can be subject to or rejected in the processes of literacy. Also pertinent is the fact that the practice of weaving in of technology is not an isolated exercise. Its development and regression is dependent upon several extraneous factors which makes it fundamentally a social exercise (Windschitl and Sahl 2002).

It is essential to consider that technology as a resource does not only require material infrastructural requirements. It requires that the teacher, as part of a community, must have access to learning environments which support and resourcefully enrich understanding how technology can help. It requires both deliberation and innovation for which guidance and access is imperative; these not only act as a stimulant but also address the beliefs and notions about pedagogy which evolve in this process.

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Chapter 20

Teacher Perceptions: The Importance of Being a Reflective Practitioner



Richa Dang

Introduction

In educational research, classrooms are the primary unit of study. So, it is imperative for us to dwell upon the one person who actively or passively controls the environment of the classroom: the ‘teacher’. The following lines illustrate the power a teacher wields in her class; it may be a dominant force sometimes, but it also might be the subtle, underlying, power which forms the basis of the classroom discourse.

I’ve come to a Frightening conclusion that I am the decisive element in the classroom. It’s my daily mood that makes the weather. As a teacher, I possess a tremendous power to make a child’s life miserable or joyous. I can be a tool of torture or an instrument of inspiration. I can humiliate or humor, hurt or heal, in all situations, it is my response that decides whether a crisis will be escalated or de-escalated and a child humanized or de-humanized. (Ginott 1975)

It may be argued that this absolute power is more an illusion rather than a reality, as the teacher herself is a “meek dictator” (Kumar 2005). She may be under enormous pressure from her seniors, officials, rules, and regulations. These pressures hardly allow her to exercise her power; rather they turn her into a powerless follower. On the other hand, the ‘dictator’ aspect of the term finds expression in the classroom and affects her students the most. The students are the ones over whom the otherwise burdened teacher wields authority in the complex hierarchy of education system. It is paradoxical that the locus of the whole education system is a student and it is the student who has least significance in the power hierarchy of the education system. Teachers are the people who implement and realize grand plans and ambitious policies of the system to achieve results without contributing much to

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it. Hence, the need to be fair, innovative, and resourceful at all times emphasizes teachers to be reflective practitioners.

Teacher: A Professional or a Practitioner

Teaching is like no other profession. Would it be right then to call a teacher a practitioner instead of a professional? First, let us understand the difference between these two.

A professional is an expert, specialising in the field which he or she practices. Higher-order skills such as creations, products, services, presentations, consultancy, primary/other research, administrative, marketing, photography and other endeavours form a part of their routine tasks. In case of other jobs, this interpretation is used as well that not all expertise is considered a profession. Although sometimes referred to as professions, occupations such as skilled construction and maintenance work, are generally thought of as trades or crafts. The completion of an apprenticeship is generally associated with skilled labour or, trades such as those of a carpenter, electrician, mason, painter, plumber, and similar occupations. A related distinction would be that a professional does mainly mental or administrative work, as opposed to physical work. As far as the term 'practitioner' goes, it may be defined as someone who engages in an occupation which deeply affects their way of life. Practitioner may refer to a medical practitioner or a legal practitioner.

These explanations, though, do not give us a very clear distinction between the two. But on careful observation, we find that one major difference which could be established between a professional and a practitioner is that of the 'other' involved in their work. Those dealing with others' lives, in their day-to-day transaction, such as doctors, lawyers, and so on, are called practitioners. Teachers, than can be easily termed practitioners, as they regularly interact with other students. They practice nurturing, concept building, caring, and developing critical thinking, among other things, in their workshops which are known as classrooms, every day. Teachers learn and improve constantly based on their experiences and engagements, unlike an accountant or an engineer whose methods and principles of working remain largely predetermined. Hence, it is important to focus on the training the teachers in the right manner.

Understanding Key Concepts

Reflections

The process of reflection helps to monitor one's own development from a raw beginner towards an experienced professional. Reflection is frequently cited as a

fundamental tool for personal and professional development. Success in teaching requires one to constantly evolve and develop one's practice by regular reflection of daily experiences. It is an activity or a process in which an experience is recalled, considered, and evaluated, usually in relation to a broader understanding of 'self' and the 'other'. It is a conscious response to past experiences. It involves conscious recalling and examination of experiences as a basis for evaluation and decision-making which further act as a source of planning for future actions. Reflective practices are based on the cycle of professional development, which involves professional knowledge, professional values, professional practices, and other such dynamics involved in professional growth.

Reflection is a form of mental processing that one uses to fulfil a purpose or an anticipated outcome. It is applied to gain a better understanding of relatively "complicated" or "unstructured ideas" and is largely based on the reprocessing the knowledge and emotions that we possess (Moon 2004).

Beliefs

Beliefs are often significant in how one selects the cognitive tools with which one interprets plans and makes decisions regarding the tasks to be performed. They play a key role in interpretation of knowledge. Beliefs can be described as an individual's internal typography through which the human mind organizes its myriad categories of people, places, and actions, and so on. In other words, beliefs can be defined as subjective theories or the world view one possesses about how the world works. In case of teachers, beliefs might also be defined as a teacher's construct about classrooms.

Ohmae (1990) has described beliefs as

It is hard to let old beliefs go. They are familiar. We are comfortable with them and have spent years building systems and developing habits that depend on them. Like a man who has worn eyeglasses so long that he forgets he has them on, we forget that the world looks to us the way it does because we have become used to seeing it that way through a particular set of lenses. Today, however, we need new lenses. And we need to throw the old ones away. (193)

An individual's beliefs, values, and metaphors generally exist outside of one's conscious awareness. Yet, they are so powerful that they drive one's behaviour automatically, without one's attention. Individual's belief strongly affects their behaviour, without them even knowing the base from where their behaviour stems.

Reflective Practices

Reflective practices are at the heart of effective teaching. Notions of reflections and reflective practices are now well-established in a number of areas in professional

education. It is emerging as an essential practice that integrates and makes sense of the self in the face of professional images constructed by society. It is in the relationship with professional knowledge that reflection becomes such an important feature of reflective practice. If reflective practice is limited to a technical level, or restricted to the evaluation of teaching and learning strategies and curriculum resources, it loses its worth. It is difficult to stress the overall importance of reflective practices in the development of a well-rounded teacher.

Reflective practice helps to build an understanding of teaching and learning to enhance professional knowledge. Teachers who are not reflective about their teaching tend to take the everyday reality of their workplace at face value without any questions. They tend to concentrate their efforts on finding the most effective and efficient means to solve their problems that have largely been defined by some collective code (Zeichner and Liston 1996). In other words, teachers who do not reflect have limited or restricted ways of thinking which do not allow problems to be framed in more ways than one by them.

Brookfield (1995) in his work has also identified a few reasons for the importance of being reflective. He says that reflection helps educators make informed decisions. These decisions can be justified to others on sound grounds. Besides, these actions also stand a chance of achieving results as desired. They may help the teachers to understand the classroom functioning in a better manner. The teachers get to know what effects they have on their students when they develop an in-depth understanding of their own set of beliefs. With this knowledge, teachers can move towards more challenging, interesting, and stimulating classrooms.

Boud et al. (2006) have described the concept of productive reflection. They argue that, on the basis of what happened in the past, productive reflections lead to interventions in work-related activities that, in turn, lead to a change in what is done. In other words, reflection leads to organizational as well as individual action.

On the idea of reflection leading to professional development, Clark (1995) suggested that learning to be a good teacher results from the conscious reflection on events, training, experiences, readings, and other contextual contributions. In a nutshell, it can be said that reflection helps in professional development of a teacher. It helps in improving critical thinking, self-evaluation, and self-directed learning. By facilitating, sorting, and selection from many ideas, Reflection promotes development of new knowledge and leads to broader understanding. This creates better self-awareness. It helps one confront the existing notions of the mind and challenge and review them. In this sense, it can undoubtedly be said to be an invaluable tool for lifelong learning as a practitioner.

Perceptions play an important role in determining a teacher's behaviour, just as in any other human being. It is of utmost importance to critically analyze these perceptions before they turn more rigid in nature. A teacher's perception influences the environment of the class room and thus, reflections play a vital role in a teacher's everyday life.

In reflective practice the practitioners engage in a continuous cycle of self-observation and self-evaluation in order to understand their own actions and the reaction they prompt in

themselves and in learners (Brookfield 1995), the goal is not necessarily to address a specific problem or question defined at the outset, as in practitioner research, but to observe and refine practice in general on ongoing basis. (Florez 2001, 2)

Reflective teaching is looking back at what you did in the classroom, thinking about why you did it, and thinking whether it works; a process of self-observation and self-evaluation. By collecting information about what goes on in the classroom, and by analyzing and evaluating this information, we identify and explore our own practices and underlying beliefs. This may then lead to changes and improvements in our teaching. Reflective teaching involves recognizing, examining, and ruminating over the way one teaches, as one possesses a set of social background, experiences, certain beliefs, assumptions, knowledge, attitudes and values which they bring to their teaching.

Essentials of Reflection

Reflection involves processing of thoughts and actions. It requires some essential processes before one can reflect meaningfully.

- ***Gathering and Evaluating Information:*** Reflective teaching requires competence in methods of evidence-based classroom enquiry to support the progressive development of higher standards of teaching. One can identify four skills here: reviewing relevant, existing research; gathering new evidence; analysis; and evaluation. These skills help vital information which can then be reflected upon.
- ***Attitude towards Teaching:*** Reflective teaching requires open-mindedness, responsibility, and whole-heartedness. Open-mindedness is an essential attribute for rigorous reflection, as any sort of enquiry that is consciously based on partial evidence, may weaken itself. We use the concept in the sense of being willing to reflect upon our own selves and challenge our belief system.
- ***Teacher's Judgment:*** Reflective teaching is based on the teacher's judgment, informed by evidence-based enquiry and insights from other researches.
- ***Collaborating with Colleagues:*** Reflective teaching, professional learning, and personal fulfilment are enhanced through collaboration and dialogue with colleagues. Whenever and wherever it occurs, collaborative learning capitalizes on the social nature of learning. The idea is significant for adults as well as children.

Methods of Reflection

There are several ways of approaching reflection. Figure 20.1 illustrates the different ways of reflection.

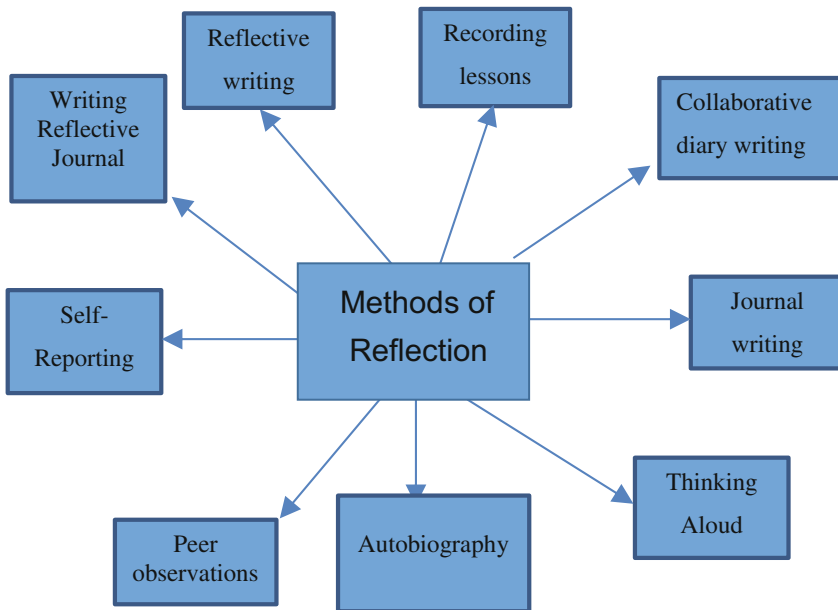


Fig. 20.1 Methods of reflection

Reflective writing is one of the most common methods of reflection. It is used extensively in teacher training programs. It is considered a medium for the student teacher to know about her own beliefs, when she steps into her classroom. Reflective writing is a process of writing or recording events in a prescribed manner. The writing process can be formal or informal. It's a personal record of one's learning experiences; it provides a space where one can record and reflect upon one's observations and responses to situations. These can later be used to explore and analyze one's ways of thinking. Reflective writing can be done through different ways, such as writing journals or through collaborative diary writing. Reflective journals are an accumulation of material based on the writer's process of reflection (Moon 2004).

A journal is essentially a vehicle for reflection. The use of a journal gains considerable importance due to the need to help student teachers learn from their experiences, where there is an intention on the part of the writer to enhance learning. The journal may not always be verbal. Words can be mixed with drawings and drawings can pre-dominate. The reflective journal may coincide with the idea of an artist's notebook. By enabling the learner to go back to the material that he/she learned, a journal helps a learner expand the ideas or the linkages between ideas in relation to the original learnings. It makes one think about the particular event or object in relation to the practitioner. A journal also becomes a place of self-explanations, that may be created in making a holistic sense of something.

Different Types of Reflective Writing

Just like methods, the ways to write reflections also vary. The different types of reflective writing includes both direct analysis of the self and also analyzing indirect inputs from the ones around. Reflections can be recorded in various manners and categories which help treat each aspect individually. Some of the categories that might be included in reflective writing include:

- Skills and attributes of a reflective practitioner
- Observation
- Communication
- Judgment
- Skills of decision making
- Team working

However, reflections may also be written in a holistic manner without any categorization. Those beginning to write reflections often feel the need of categories to begin with, but then may progress to more holistic reflections.

Reflective Practice in Teaching: Theoretical Constructions

John Dewey has been influential in the area of educational philosophy in the late nineteenth century and the early twentieth century, he advocated child-centred learning and the importance of an individual's lived experiences as a starting point of learning. In his work, he states that

Thought affords the sole method of escape from purely impulsive or purely routine action. A being without capacity for thought is moved only by instincts and appetites, as these are called forth by outward conditions and by the inner state of the organism. A being thus moved is, as it were, pushed from behind. This is what we mean by the blind nature of brute actions. The agent does not see or foresee the end for which he is acting, nor the results produced by his behaving in one way rather than in another. He does not "know what he is about." Where there is thought, things present act as signs or tokens of things not yet experienced. A thinking being can, accordingly, act on the basis of the absent and the future. Instead of being pushed into a mode of action by the sheer urgency of forces, whether. (Dewey 1910, 4)

Dewey elaborates on the need for minute dissection of our actions. Our actions are so deeply ingrained that they become part of our being and remain largely unchallenged. We tend to think, act, and behave blindly because of our beliefs and ingrained habits. Hence, knowing oneself becomes the right way to know everything around; reflections therefore become a necessity.

Dewey was amongst the first to believe that reflection is guided by a critical lens to look at the accepted and taken-for-granted reality, which helps move people away from their routine thinking and actions. When people are dragged along by events, they are unable to fully understanding the bigger picture; thinking about

their actions helps them, as Dewey says, to move from the routine action towards reflective action, marked by self-appraisal and development. Dewey stressed that one is able to draw out better ideas from a situation in which one faces conflicts and difficulties, for these are the situations which push one to think about one's actions, or to reflect on one's own thinking.

It is also seen that teaching takes place in a social setting that has its own unique characteristics, opportunities, and constraints. The practice of Reflective Teaching explores the implications of all these complex factors with the intention of understanding and improving the teaching–learning process.

Schön (1987) derived the notion of reflection in and reflection on action. By identifying the ways in which the practitioners could become aware of their own thinking and beliefs and learn from their implicit knowledge and experience.

Reflection in Action

It can be explained as an ongoing experiment which helps to find a viable solution to the teacher, where the teacher needs to act according to the situation; in other words, it can be understood as the ability of a practitioner to think on her feet.

Example 1

As per the plan, the concept of money was to be taught in the class using fake currency notes. She brought bundles of different currency notes and distributed it among the students. She played the role of the vendor who would give things in exchange of money. The students were excited to enact this routine activity of daily life as a make-believe game in the classroom. In their excitement and enthusiasm, they started sharing and borrowing money from each other, in order to buy more things from their teacher. Soon, this borrowing and sharing led to snatching and tearing of the fake notes among students. The activity descended into complete chaos in the classroom. Hence, the purpose of the activity was lost, as it could not be continued effectively. The teacher then discontinued the activity and collected all the remaining currency notes back from the students. However, this event did not lead to frustration and disappointment; instead, she used this opportunity to explain what happens in society when people steal or fight over money with each other. There is a chaos and the markets close, similar to what happened in their classroom. As a result, nobody can use the money for which they have fought so much and also the essential supplies are stopped.

(Source: Observation of a Student Teacher 2016)

In the above example, the teacher reflected on her actions as and when they were happening. This helped her alter her pedagogy and use it to the benefit of her students. If she would not have reflected on her actions instantaneously, she might have ended the activity to settle the chaos and scolded the children for their behaviour. It is clear that reflection in action helped her revise her plan and guided her to deviate from the planned activity in the wake of unforeseen consequences.

Eventually, she used the opportunity constructively to explain important concepts to her students, even though they were not the expected outcomes.

Reflection on Action

It is a reflection that happens after the event has occurred, where the practitioner is required to review and examine his or her actions in order to improve their future practice. Such reflection on action helps one to evaluate them and informs subsequent planning and instruction and leads to a cycle of continuing professional development.

Example 2

The lesson was to introduce the concept of nouns and verbs in Class 2, with the help of flash cards. The activity required the students to make sentences based on the pictures depicted on different flash cards. Each child had to come and choose one flash card. Then they had to look at the picture on the flash card and loudly speak what was drawn on it. Even after repeated attempts and many examples, students did not respond as was expected from them. The teacher was extremely disappointed with the response, as her planned lesson fell flat and she could not do anything to save it.

Reflecting on this she found that she had not checked the previous knowledge of the students and used the flash cards as an introductory activity. This might have resulted in poor performance by the children who could not even name the activities or things depicted on the flash cards in English and hence, did not respond to the teacher's questions even after repeated attempts.

(Source: Observation of Student Teacher 2016)

In the second example, it is evident that the reflection on her pedagogy helped the student teacher to find a logical explanation to her failed exercise in the class. In absence of such reflection on the action, she might have concluded that the class was dull or that the students were inefficient and lazy. Such beliefs would have stayed with her throughout future interactions with the students of this particular class and shaped her attitude towards them accordingly. However, on reflecting, she could find the areas where she needed to focus to make her lessons more relevant. Perhaps the learning from her reflections might stay with her for her entire life and turn her into a better practitioner.

In both the examples, the lesson didn't turn out well; however, the outcomes were not the same in both the cases. In the first case, the teacher could improvise on the spot, as she reflected on the situation; whereas in the second case the teacher found out the reason for poor execution of the plan on reflection about it later. In both the cases, reflecting on the experience helped them understand their situations better. In the absence of reflection, it would never have been easy to reach the real cause for problems behind delivering the planned lessons. It might have even led the teachers to believe in either their or their pupils' inability to do well. Such A belief would have reflected in their future action.

Gibbs (1988) gave an explanation saying that ‘iteration’ is an act of repeating a process with an aim of achieving a desired goal, and the model involves the use of one stage as the starting point for the next, which results in continual evolution and improvement; it can be called the ‘cycle of learning’. Operating a process with the aim of achieving a desired goal, reflective practice suggests that individuals can develop analysis of feelings, evaluation of experience, and so on. Jasper (2011) associated reflective teaching practice with lifelong learning, resulting in the development of autonomous, qualified, and self-directed professionals. Engaging in reflective practice is associated with the improvement of the quality of care, stimulating personal and professional growth, and closing the gap between theory and practice. Bartlett (1990) points out that becoming a reflective teacher involves moving beyond a primary concern, with instructional techniques and ‘how to’ questions, and asking ‘what’ and ‘why’ questions, that relate to instructions and managerial techniques, not as ends in themselves, but as a part of broader educational purposes. Asking the questions ‘what’ and ‘why’ allows individuals to gain a certain control of their teaching, resulting in the emergence of autonomy and responsibility in the work. In reflecting on the kinds of question above, teachers begin to exercise control and open up the possibility of transforming every day classroom life. Lieberman and Miller (2001) pointed out that the practice of reflective teaching, reflective inquiry, and reflection on practice, results in enhancing personal and professional knowledge. This knowledge of the learner and of oneself is important for being an effective teacher and in shaping children’s learning. Han (1995) states that the process element of reflection emphasizes how teachers make decisions, content stresses the substance that drives the thinking, and reflective inquiry may set the stage for learning how to be a good teacher. (cited in Navaneethan 2011) proposed reflective teaching to the act of creating a mental space in which to contemplate a question or idea, such as, ‘What do I know now about teaching young children?’ This often-repeated question leads to mental transformations transcending a particular time and situation. This leads to deeper perspective building which further helps students teacher’s.

Teacher as a Reflective Practitioner

Reflective practice is essential for the practitioners involved in highly skilled and dynamic jobs which concern subjects. In the case of teachers who deal with almost forty children on an average, who are never constant, and are ever evolving reflections attains utmost importance. Teaching is therefore, a complex and highly skilled activity, which requires teachers to exercise judgment in every situation. The process of reflective teaching supports the development and maintenance of professional expertise. We can conceptualize successive levels of expertise in teaching: those that student-teachers may attain at the beginning, middle, and end of their courses; those of the new teacher after their induction to full-time school life;

and those of the experienced, expert teacher. Given the nature of teaching, professional development and learning should never stop.

Therefore, the capacity to reflect on one's own action so as to engage in a process of continuous learning is paramount for practitioners. According to another definition, it involves "paying critical attention to the practical values and theories which inform everyday actions, by examining practice reflectively and reflexively. This leads to developmental insight".

The central idea is that experience alone does not lead to learning but that 'considered and deliberative' reflection on experience is essential to learn.

Reflective teaching should be personally fulfilling for teachers, but also lead to a steady increase in the quality of the education provided for children. Indeed, because it is evidence-based, reflective practice supports initial training students, newly qualified teachers, teaching assistants and experienced professionals in satisfying performance standards and competences. Additionally, as we shall see, the concept of reflective teaching draws particular attention to the aims, values and social consequences of education.

Role of Reflective Teaching in Teacher Education

Reflective practice is used during both the pre-service and in-service levels of teaching. Coaching and peer involvement are two aspects of reflective practice seen most often at the pre-service level. In a 1993 study of how student teachers develop the skills necessary for reflective teaching during their field experiences, Ojanen explores the role of the teacher educator as a coach. Teacher educators can most effectively coach student teachers in reflective practice by using students' personal histories, dialogue journals, and small and large-group discussions about their experiences to help students reflect upon and improve their practices.

Kettle and Sellars (1996) studied the development of third-year teaching students. They analyzed the students' reflective writings and interviewed them extensively about their reflective practices. They found that the use of peer reflective groups encouraged student teachers to challenge existing theories and their own preconceived views of teaching, while modelling for them a collaborative style of professional development that would be useful throughout their teaching careers. Kettle and Sellars (1996) analyzed student teachers' reflective writings and interviewed them extensively about their reflective practices. It was found that the student teachers, by practicing reflective teaching, enables themselves to challenge existing theories and their own preconceived views of teaching, resulting in professional development that would be useful throughout their teaching careers. Several research studies have proved that critical reflection upon experience continues to be an effective technique for professional development.

Freidus (1997) describes a case study of one teacher/graduate student struggling to make sense of her beliefs and practices about what constitutes good teaching. Her initial pedagogy for teaching was based on the traditions and practices of direct

teaching. Her traditional socialization into teaching made it difficult for her to understand that her views of good teaching were being challenged in her practice. Implementing reflective teaching technique in her classroom enabled her to acknowledge and validate what she was learning. The present paper highlights the importance of practicing reflective teaching pedagogy by teacher trainees during internship, so that they develop reflective attitude.

Need and Importance of Reflection

A fish is not aware of the water that surrounds it. It is so immersed in its environment and surroundings that the realization of water around it, is not consciously registered in its mind. The teacher too is like a fish. She is so habituated to the environment around her that it is not consciously registered. To become aware of her environment it is of utmost importance to take into account an outsiders view. Reflection is a tool with the help of which she can consciously register her environment, understand its intricacies, and rearrange her own beliefs on the basis of facts and logic rather than images and prejudices. One of the most extensively used examples in the field of education, which will further emphasize the importance of reflective practice, is the experiment conducted by Robert Merton.

Merton (1948) introduced the term Self-fulfilling prophecies. He describes it as, “a false definition of the situation evoking a new behaviour which makes the originally false conception come true”. A teacher’s perceptions of her student can elicit the expected response from the student. An example of this can be found in the study by Rosenthal and Jacobson (1968).

They tested children at Oak School with an IQ test, the Tests of General Ability (TOGA), at the beginning of the school year. This test was used because teachers were likely to be unfamiliar with it, and because it is primarily non-verbal, and not dependent on skills learned in school (reading and writing). In order to create expectancy, the teachers were informed that the test was the ‘Harvard Test of Inflected Acquisition’, which served as a measure of academic ‘blooming’. Therefore, teachers were led to believe that certain students were entering a year of high achievement, and other students were not. In reality, the test had no such predictive validity.

Eighteen teachers at the school were informed about the students in their classes who had obtained scores in the top 20% of this test. These students were ready to realize their potential, according to their test scores. What the teachers didn’t know is that students were placed on these lists completely at random. There was no difference between these students and other students whose names were not on the lists. At the end of the school year, all students were once again tested with the same test (the TOGA). In this way, the change in IQ could be estimated. Differences in the size of the changes for experimental and control group children could serve as an index of any expectancy effect.

Rosenthal and Jacobson's results demonstrated expectancy effects. There was a marked difference in IQ test score gains. Students who had been labelled as 'ready to bloom' showed greater gains than those who had not been labelled in this way. One interesting qualification to these results was that they occurred only for the youngest children (1st and 2nd graders). No consistent difference in IQ scores was observed in older children. The authors offer a number of reasons for this age difference in expectancy effects. Perhaps younger children are more changeable because of their tender age, or were perceived as more malleable by their teachers. Another possible reason for the age difference was that perhaps younger children are more susceptible to the subtle influences that are characteristic of expectation effects.

Rosenthal and Jacobson's results demonstrate the power of self-fulfilling prophecies. Students believed to perform better academically performed in accordance with these expectations; in contrast, the students labelled otherwise, actually did not perform well. Similar researches have supported Rosenthal's original conclusion, that teacher expectations can have a substantial effect on students' scholastic performance. This is where reflective teaching helps the teachers, to look into their minds and sieve out their biases, to keep their classroom practices under check, to practice the belief that each child has potential, and to prevent this belief from turning into mere rhetoric, which is often repeated but rarely implemented. This is just one such example; many more can be observed in each class every day, where reflective teaching plays a pivotal role in determining the attitudes of teachers and the performance of the children.

One's experiences in school have time and again reiterated the need for constant reflecting. It clears the cobwebs of beliefs and biases, and gives a clearer perspective of events and actions.

Example 3

A student of Class 3 was labelled a problem child by his previous class teacher. I was advised to deal with him differentially. My teacher training and beginners enthusiasm, however, prevented me from taking this advice at face value. I decided to find solutions to the problem I was facing with the child. I tried to constantly engage with the child and not lose patience with his aggressive, violent behaviour. Besides, I reflected on his classroom responses, behaviour with peers and altered my methods accordingly. I identified the areas the child showed interest in and also the situations which often flared up into fights and violence. Gradually, the child exhibited considerable improvement in his class performance and social behaviour; in addition, his stuttering subsided to a large extent. This experiences redeemed my faith in the power of effective reflective practices and also that there are no bad students. The teacher before me was not a bad teacher. She allowed her beliefs to form perceptions about a child which concretized themselves to an extent where she started believing that the child was beyond improvement. This might have been prevented if she would have effectively reflected on her actions and beliefs.

(Source: Author's Experience 2015)

Conclusion

Reflective teaching finds space in the policy documents and guidelines of teacher education courses, such as Bachelors of Elementary Education (B. El. Ed.). However its practice, most of the times, is restricted only to the training period. Regular teachers find little time or motivation to reflect on their everyday classroom discourse. Therefore, this brilliant tool of self-evaluation and learning loses its importance in the humdrum routine of a teacher's life. Of course, some schools and N.G.O.s, such as Bodh, Teach for India, and Digantar, practice reflective teaching within their organizations as well as in the schools they are associated with. However, it is limited to their volunteers and is not practiced effectively by all the members of the associated schools. They are unable to create the ethos of teaching where reflections become an integral part of the teaching process. Reflective teaching helps a teacher evolve and mature, which can make our classrooms more creative and happy spaces.

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Chapter 21

Childhood: Theoretical Perspectives and Lived Realities



Mansi Aneja

Introduction

The child is familiar to us and yet strange, she/he inhabits our world and yet seems to answer to another; she/he is essentially of ourselves and yet appears to display a different order of being. Thus the child cannot be imagined without considering the idea of adult just as it is impossible to picture the adult and society without positing the child. (Christensen 2000, p. 43 cited Jenks 1982, p. 9)

The above lines aptly capture the multiplicity and ambiguity in contemporary childhood studies in addressing quintessential questions of who is a child and how an adult–child relationship is perceived in a particular society. The subject of enquiry consists of a broad spectrum ranging from historical accounts of childhood (Ariès 1962); emergence of civilized, disciplined and vulnerable bodies of children in changing socio-political contexts (Shilling 2012; Foucault 1977; Christensen 2000) and from the perspective of new sociology of childhood (Corsaro 2011). The opening section of this chapter attempts to situate the construct of childhood in contemporary theoretical discourse, and the second section comprises a comparative analysis of lived realities of the author and the children of a village in Uttarakhand. It features nuanced, implicit, and taken-for-granted aspects of everyday life of the child, while growing up. The study described in this chapter is significant as it provides valuable insights into real experiences of growing up in a specific social context as compared to what has been perceived as a ‘normative childhood’ in mainstream academics. It would enable the policy makers, educators, parents (and other adults) to acknowledge the experiences of children in their own right rather than comparing them to adults and focusing on their deficits and

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inabilities. It is especially useful for teacher educators and teachers themselves as it challenges the existence of a universal childhood and enables us to view childhood in multiple dimensions, thus providing scope to develop diverse learning environments suited to each child's social context. This understanding of childhood also values and imparts meaning to the experiences of children themselves in their everyday lives.

As a student of one of the most prestigious teacher training programs (Bachelor of Elementary Education) from University of Delhi, I developed keen insights and perspectives about the constructs of childhood and the lives of children. The theoretical and practicum components of the program provided exposure and spaces of interaction of various degrees with children in different contexts: children of marginalized and low-income group families in a slum area, children around my neighborhood, children as learners in an institutional set up (traditional school, innovative school, NGOs). It also sensitized me towards the presence of different social backgrounds, interests, needs and experiences of children, when they come to the school, simultaneously equipping me with a critical lens through which to observe the dynamics of accommodation (or marginalization), representation (or misrepresentation) and legitimization (or delegitimization) of experiences and identities of children through routinized school practices and processes.

However, the experience of working as a volunteer in a village community gave me an insider's perspective into the lives of the children there which was starkly different from my own experiences of growing up. While helping me reconsider the taken-for-granted assumptions based on the (rather limited) experience that I gained through my teacher training program, I also realized that the definition of 'multiple childhood' needs to encompass the understanding of the implicit meaning-making and routinized activities of a child in her community life, variations in the nature of adult-child continuity, as well as methods of child rearing, the dynamics and complexity of the social interactions of the children with peers and community members in a myriad of social identity markers, like experience of growing up as a girl/boy, belonging to a high/low caste group, and so on. The learning experiences provided by a school, therefore, need to be representative and inclusive of the lived realities of the children and their childhood experiences; these may include more than the aspects of contemporary theoretical discourses to contemplate childhood.

According to Buckingham (2013, p. 6), the understanding of 'childhood' is a constant process of meaning making in various contexts. Its meaning and interpretation vary in both public (media, social policies, and academics) and private (interpersonal relationships of family, peers and community) discourses. Childhood is not a construct with fixed and rigid meanings its meanings differing in varied contexts: historical phases, cultures, social groups. Buckingham (2013) states that the understanding of children in this construct, is not only restricted to them existing as biological individuals but is also influenced by how they are represented in institutional practices and social policies to *produce* child-like behavior and subsequent resistance to this expectations by the children. The following section discusses diverse meanings and conceptualizations of the construct of 'childhood' in anthropological and sociological accounts.

Anthropological Accounts of Childhood

Baxter (2008) traces many historical and thematic debates reasoning the importance of study of childhood for the archaeologists. He significantly states that archaeology is based on the premise that culture is learnt and not inherited. The study of childhood in a particular cultural setting becomes the most natural area of interest for all archaeologists as it would enable them to identify different ways in which childhood is constructed in various cultures and living experiences of children. Even then, the literature on the anthropology of childhood is marked by the stark marginalization and invisibility of 'childhood' as a subject of enquiry due to two barriers (Baxter 2008, 161–162). The first barrier stems from the western constructions of childhood, which is perceived as universal, biological, and natural. The contributions made by children to society is limited. They are dependent on adult members of the society for their sustenance. Childhood is perceived to be a time of innocence and of learning and training. The second barrier stems from children's invisibility in archaeological thinking and research due to their unconventional and unpredictable ways of using artifacts and spaces in the past.

Ariès (1962) in his seminal work *Centuries of Childhood* has described significant historical accounts to conceptualize the idea and meanings of childhood in dialectic of past and contemporary societies. The book is historiographically significant as it raises significant questions: "What is modern childhood? From where does it come? What is its significance?" (Ryan 2008). Ariès claimed that the idea of childhood did not exist in medieval society (Ariès 1962, 128). It did not mean that children during this time period were not taken care of, or were neglected or despised, but that it was not recognized as a valuable distinct phase of human existence. Children were perceived as 'miniature adults' in the sixteenth century and were recipients of attention, affection, and coddling. In seventeenth century, this perception of children began to be questioned by many moralists and pedagogues as it lacked the development of faculties of reasoning and disciplined rational manners in children. This lacuna led to the emergence of a 'serious and realistic idea of childhood' where children were to be safeguarded and reformed owing to their fragile dispositions. Thus, the notion of childhood in the sixteenth century, which emerged as an age of care and affection, eventually got imbued with the idea of a 'disciplined body' in the post-Renaissance period. This disciplined body was to be trained, corrected, civilized and reformed from childhood, and moulded according to the prevalent accepted social norms. The eighteenth century witnessed the extension of childhood for the entire duration of the school cycle where children were subjected to strict and effective discipline. Systemic education system became very significant by the end of the eighteenth century. Special institutions and age graded schools were devised to achieve the goal of effective discipline in childhood. Ariès saw these changes as representative of shifts in institutional arrangements in European societies. Many scholars have rooted their grand stage theories on Ariès' remarkable work and emphasized the presence of standard stages of childhood that are uniform across the world. For instance, the "psychogenic theory of history" as

postulated by Lloyd de Mause in 1974 (Corsaro 2011) states that historically, the conception of childhood and treatment of children resulted from how parents worked out their anxieties and problems in their communication with their children. The work of Aries and the like is criticized by Linda Pollock and other historians for its sweeping claims, its reliance on indirect evidence (such as paintings, religious tracts and letters), and its unsystematic historical analysis.

Various childhood studies from 1880 to 1920, in US and Western Europe demonstrated that childhood was increasingly conceptualised and interpreted in “paediatric” and “pedagogical” terms (Levine 2007, p. 248). These studies claimed that the nature of child rearing had become “scientific” based on vast knowledge base of medical advancements and child development theories. It was no longer guided by cultural practices and social customs only. During the same time period, many anthropological studies were conducted based on the customs and lives of people of Oceania, Asia, Africa and the Americas. These studies demonstrated that there was a stark disparity (from the Western discourse) in which child rearing practices and notion of normal childhood was constituted in these societies. Such differences were highlighted in a prominent form, in the researches of Margaret Mead on childhood in Samoa and Malinowski on the sexual life of savages in North Western Melanesia in 1928 and 1929 respectively (as cited in Levine 2007). These “ethnographic evidences” also contested the idea of universal childhood propagated by research studies and theoretical perspectives of the western countries. This debate brought few significant aspects for deliberation in the public discourse— notions about normal childhood, best and most appropriate way of raising children, stages of child development and impact of culture, societal forces (Ryan 2008).

The anthropology as a discipline partly depends for its content on the knowledge base of other disciplines (Levine 2007). The anthropology of childhood explores assumptions about how a child engages with her surrounding environment, for which aspects she is sensitive to and age-related understanding of her environment. Anthropology seeks the plausibility of these assumptions predominantly from the areas of psychology and psychiatry. But, when the theories of these disciplines are discredited or modified, the ethnographic accounts based on them also become obsolete. Therefore, the constantly changing unstable nature of mainstream theories posits a risk to the anthropological understanding of childhood experience. “A characteristic response of the anthropologists to the claim of developmental psychology and psychiatry was to use ethnographic evidence to prove them culture bound, suggesting that a modified theory is needed to encompass the cultural variations” (ibid, 250). However, developmental psychology has persistently distanced itself from ethnographic attempts to define childhood realities and experiences. Ethnographic accounts of childhood from 1930s have been rooted in kinship relationships, cultural practices and socialization processes and very rarely on the explanations based on mainstream psychological theories.

In the first half of the twentieth century, many anthropologists did various ethnographic studies on childhood that were inspired by Freud’s psychosexual development theory. The implications of Freudian influence on these studies were such that “breast feeding, weaning, toilet training and sexual behaviour” were

considered the most significant events of the childhood (ibid, 251). It was, however, not always essential that they used the same Freudian stages or fixations in their interpretations. During 1930s and 1940s, many anthropologists interested in childhood studies, the conception of childhood experience was provided by 'neo-Freudian' psychoanalysis movement initiated by Edward Sapir. "In this conception, there were no libidinal stages, and the focus was on the quality of the child's interpersonal experience with parents and siblings during the early years. Unlike the orthodox Freudians, the neo-Freudians were open to the study of cultural variation, and their theory could be related to social relationships as ethnographers observed them" (ibid, 251). All these psychiatrically inspired ethnographies were critiqued as they had a 'judgemental cast': the opinions and ideas of parents were not given any space in ethnographic studies. A new view of childhood was constructed and advocated by Edward Sapir which focussed on making sense of child's experience-meaning making, organization, routinized patterns. It also emphasized the need to focus on child's subjective interpretation of an experience than confirming it to the behavioural understanding of it. It assumed the child to be an active decision maker concerning the culture patterns.

Childhood: Conceptualized as Emergence of Civilized, Disciplined and Vulnerable Bodies of Children

(a) Childhood and the notion of the civilized body

The emergence of the 'civilized bodies' was a prominent feature of post-Renaissance societies as an ideal for childhood which focused on the importance of emotional control and body management as compared to the violence and lack of prohibitions characteristic of the Middle ages (Shilling 2012). The detailed codes of body management were institutionalized for the children. This led to the development of civilized bodies involving a progressive socialization of the body from the childhood itself. This led to people defining their embodiment in opposition to everything they felt was animal or biological, thus, separating the body from the nature. The manners and dispositions of individuals became important markers of her/his value and self-identity in the society. They also marked a profound separation between adults and children in terms of how an individual behaves, speaks and thinks. Children had to learn these ways of self-control in order to become accepted members of the society. They only had few years to attain the advanced level of 'shame and revulsion that has developed over many centuries' (Shilling 2012, 171). The life of children was subjected to strict control, requiring disciplinary practices in their everyday lives.

(b) Childhood and the notion of the disciplined body

The eighteenth century witnessed the emergence of 'docile bodies' in childhood with the coming of 'positive economy' (maximum utilization of body activities in a given time) where disciplining was done by the creation of docile bodies

and the means of corrective training. (Foucault 1977). Discipline was a series of techniques by which the body's operations could be controlled, and it worked by organizing and coercing the individual's movements in space and time. Iyer (2013) states that these new rigorous ways of perceiving the 'body' facilitated the process of controlling and regulating in unprecedented ways. Not only did it make the body obedient and docile but it also enhanced its economic utility in various social institutions. School, being a very significant social institution became the site where such disciplinary strategies and practices are applied to create an nurture 'docile bodies' on a mass scale. Surveillance was the major mechanism to exercise disciplinary power and was integrated into the architecture and pedagogic practices of the early modern European schools. Therefore, "... a relation of surveillance, defined and regulated (was) inscribed at the heart of the teaching practice, not as an additional or adjacent part but as a mechanism that is inherent to it and which increases its efficiency" (Foucault 1977, 176). Iyer (2013) states that; "Foucault argues that, at the heart of the disciplinary power exercised in early modern schools, was a judicial-penal system, wherein judgments were passed on lapses such as (a) misuse of time/idleness; (b) failure to perform an activity, due to inattention, negligence, or lack of zeal; (c) improper behaviour, such as disobedience; (d) inappropriate usage of speech, such as idle talk and (e) non-maintenance of the body, such as lack of cleanliness."

(c) Childhood and notions of dependence and vulnerability

From her ethnographic study of 6–13-year-old Danish school children in Copenhagen, Christensen (2000) attempts to understand cultural and social meanings of 'vulnerability' in an adult–child relation, especially in situations of the child's illness or accidents. In such situations of the child's vulnerability, the adult assumes the role of active, protecting, and responsible figure in relation to a passive and unprotected child. Although there are many anthropological studies which have documented the specificity and differences of experience of vulnerability in different cultures, Christensen, however, explains that childhood is essentially constituted as a taken for granted vulnerable phase in Western discourse where children are seen as vulnerable in two aspects: as members of a family receiving care, protection and training; and, as a non-worker in production processes. In this discourse, the child must not work and is not expected to do so, but has instead the right to play and learn (2000, 41). The aspect of vulnerability in childhood is understood, perceived, and experienced differently by adults and children. Adults conceptualize the child's vulnerability through objective reality, bounded and interpreted by clinical diagnostic views (somatic aspect of the body), whereas children conceptualize this vulnerability in unbounded subjective experience (incarnate aspect of the body). Adults translate these subjective experiences by objectifying the body (outsider's view) and classifying the parts of the exterior body which is hurt for a particular duration of time, as a factor responsible for inflicting vulnerability on a child. However, for the children, they express their vulnerability in terms

of experience of losing/not being able to be involved in their everyday practices, routines, and social interactions with others. For the children, the body incarnate is experienced in interaction with the environment and others.

From this study, Christensen stresses that the anthropological understanding of childhood needs to move beyond the adult's representations and imageries and also needs to contextualize childhood in subjective lived experiences of children in their social world. It would be important not only in understanding certain situations of vulnerability in childhood but some basic conceptions of childhood itself and certain ways in which children perceive themselves and are perceived by others.

New Sociology of Childhood

The new social study of childhood is based on three tenets: childhood is a political and cultural construction rather than a natural phenomenon; children are active subjects operating within a social field rather than mere products of heredity and environment; and to perceive childhood as open-ended, in an interdisciplinary form of enquiry moving beyond dualisms (Ryan 2008). Corsaro (2011) discusses pertinent strands of the new sociology of childhood. One of the significant strands proposed by Danish sociologist Jens Qvortrup states that childhood research is often focused on lives and activities of children in an anticipatory perspective: what they may happen to become later in life, often guided by many adult interests. He uses the word *Paternalism* to describe the marginalization and overlooking of the children for what they are themselves and what they do in their own right. *Paternalism* is “the combination of dominance and benevolence, in the sense that any dominant group allegedly knows best what is good for the dominated group” (Corsaro 2011).

Social theories of childhood often study childhood through behaviourist and constructivist stances, both of which fail to include children's interpretive reproductions (Corsaro 2011). While the former stance relegates children to a passive role in this process, the latter perceives children in an active role but, simultaneously, ignores the complexity of social structure and children's collective activities. Corsaro (2011, 20–21) states that “The term *interpretive* captures the innovative and creative aspects of children's participation in society and the term *reproduction* captures the idea that children are not simply internalizing society and culture but are actively contributing to cultural production and change.”

A new sociology of childhood focuses on the structure of childhood and children's interpretive reproductions. The structural perspective to study childhood rests on assumptions that childhood is a structural category in society (as against only a temporary period for children), childhood is governed by same societal forces which govern adulthood and children are also co-constructors of their childhood (Corsaro 2011, 31). In the words of Qvortrup “By conceptualizing childhood as a structural

form, the study of childhood moves beyond the individualistic, adult-oriented and time-bound perspectives and sees childhood as integrated in society.”

The defining of childhood as a universalized, unitary, singular construct, becomes problematic as it has to be seen as being situated in the everyday life experiences. Thus, there is a need to get a glimpse of childhood as the lived reality of children in a given social setting and focus on their experiences, expectations, and interpretations. The viewpoints of the children and other adults as the everyday participants of the community life are not taken as only ‘opinions and ideas’ but as a more elaborate ‘life world’ shared by them. The life world is the experientially given world which is taken for granted by its members (Schutz 1967), and the existence of the life world and the typicality of its content are accepted unquestionably by its members. It is from this that they derive the norms, values, attitudes, and scripts which support and guide the course of everyday activity and provide the basis to anticipate, to make choices and decisions. Garfinkel (1984), through the studies in ethnomethodology, states that there is something implicit in routine activity that accounts for its meaning and validity. The understanding of the ‘implicit’ and ‘indexical’ of everyday life would give a nuanced understanding of multiple childhoods and how the participants account for many practices and negotiate various meanings in their daily lives.

In a life world, there emerge multiplicities of regional, religious, caste, and gendered identities, making many different childhoods possible. These identities serve as points of reference, whereby persons define themselves in relation to the world and to other people: an awareness of persons of who they are and where they belong. There are many ethnographic studies elaborating the formation of childhood identities rooted in the nexus of social relations. Dube (1988) gives an account of growing up in a *Kuruma* caste community: “Ilaiyah (1996) discusses the caste training of boys and girls in the *Kuruma* community. Young boys in this community are taught the language of sheep and sheep-rearing activities, and the girls are taught how to handle young children, powder dry chillies, husk paddy, cook in mud-pots that break easily, and so on. His account gives us an insight into the development of gender roles in a particular social caste group.” Another account discusses the formation of gendered identities for the maintenance of the caste hierarchies. Dube (1988), discusses how gendered subjects are formed through rituals and ceremonies, the use of language, folk tales, folk songs, proverbs, legends, myths, and practices, within, and in relation to, the family in patrilineal India. She states that “puberty” of girls is considered as a remarkable event in cultural practices of both north and south Indian societies. It is accompanied with constrained mobility of girls, limited interactions with the male members of the community and other social taboos restricting this perceived impure state from spreading around. The post-pubertal phase in the childhood of girls is structured around the management of her sexuality as it is a crucial defining element of her identity as a future wife and a mother.

The next section draws a parallel between my experiences of growing up in an urban middle-class family of Delhi, and the growing-up experience of children in a village of Uttarakhand.

About Bodhshala School

The school, which comprises my field in my explorations, is located in Kempty, 12 km from Mussoorie in the Central Himalayas, and is run by The Society for Integrated Development of Himalayas (SIDH). Since 1989, the school has been a pioneer institution in engagement with innovative teaching–learning practices and integrating education with the local physical and social environment of the children. It provides education till Class 8, has many students who come from nearby and far flung villages. It is located in the picturesque location among the hills and all the children come to school on foot, often walking down narrow *kaccha* (temporary) muddy lanes from their villages and some even walking up to 10–12 km every day. The school has well-furnished classrooms with teaching resources, science and maths labs, a functional library, a school assembly/playground, and a mess. I worked as a volunteer at this school for three months in 2011, and, during the course of my stay developed valuable insights into the lives of children coming to the school. During my stay, I had the opportunity to stay with the community members, participate in their everyday activities, and engage in interactions with the villagers. I maintained a daily journal in order to record my interactions and reflections.

Proximity with Nature

One day, while working in the campus mess, I was asked to get some chillies from the campus garden area. I stood in the garden for few minutes, quite bewildered at my ignorance about chillies: Was it a shrub, plant, tree, or creeper? What if it grows under the soil, how would I recognize from its leaves? I had read biology in high school and had also memorized species, genus, and botanical names of many plants. I also studied the various patterns of branches, leaves, veins in the leaves but all these were details to be recalled for the entrance exams. I stood there and questioned my own knowledge, which was based on cramming and memorization of prescribed textbooks with no connection or interlinkage with real life. I could not even identify a basic condiment which goes in the everyday preparation of my food!

During my interactions with children, I learnt many interesting aspects about the local plants and animals of that region. It included identifying the bushes which can cause skin allergy, the difference between *taazi* and *purani subzi* (fresh and old vegetables), which plants have medicinal value, and which wood would serve as an excellent fuel source, how to distinguish a *bitchu* from a *makadi* (scorpion and spider), and the fact that the snakes of hilly areas are not poisonous and dangerous, and we should run in zig zag pattern to escape from them. They also taught me about the tight grip and the placing of my foot while climbing up or down the hill, to avoid slipping and injuring myself in rainy season. I was really fascinated by the

way, the children addressed the household pets (cows, buffaloes, calves, dogs, cats, etc.) and took care of them. One of the children shared with me his daily routine, and how it was intertwined with taking care of cows and calves in the shed. He knew different types of grass to be used for the cows: soft, green ones for eating and dry yellowish ones for keeping in the shed for warmth, techniques of milking a cow, vegetables to be fed and how to feed, symptoms when cows are not well, which insects are dangerous for animals and humans, that are found in the vicinity of farm animals, symptoms and natural cures for the diseases, and so on. Their experiences of growing up were rooted in nature and an in-depth awareness about their environment. It was not part of a prescribed curriculum at school but a way of life for them. Their everyday interdependence and engagement with plants and animals also gave them a sense of ownership and responsibility towards their environment.

Life at Home

During my stay, I observed a very strong continuity in the adult–child relations, where children were not reprimanded for adult-like behaviour or work, and also that they were not spatially secluded inside home or in community. The children (both boys and girls) were expected to contribute in different ways in household chores, while simultaneously, maintaining a balance with their studies.

Children were actively involved in the discussions of adults about financial matters, concerns and issues of immediate and extended family, neighbourhood gossip and even possibilities and efforts of finding an eligible partner for a family member who has attained marriageable age (22–23 for girls; 24–25 for boys). My daily one kilometre commute through a hilly stretch and the recess break in school provided me many opportunities to overhear children's interactions and strike conversations with them. Once, while going back from school, two children jokingly shared with me the personal details, family backgrounds, and peculiar behavioural activities, of some of their teachers. They were aware of all these details, as the teachers were from their community, and their families had close ties with one another. In another episode, I overheard a girl scolding her younger sister for her extravagant demands for food and clothes, and tried explaining the financial crunch the family was experiencing as overheard by the elder girl. There was a strong sense of the way a child identified oneself in relation to others around her. A child coming from a particular village had a familiar way of addressing another person from the same villager in terms of relations based on the age and level of comfort. Any introduction of a person would soon be followed by how the child knows him/her and their ties with the child's family. For instance, a person is addressed as *tau* if he is elder to the child's father and belongs to the paternal side of the family. Any female who is an acquaintance of her mother becomes *massi*. A generic use of 'uncle' and 'aunty' would suffice to capture my understanding of all social relations beyond my immediate family.

This was very different from my experience of growing up, where I was deliberately kept out of adults' discussions for most of my teenage years as it was not '*bacchon ki baat*' (children's talk). Any comment or show of interest in grown-ups' discussions was frowned upon, and was not encouraged. Rather, I was being constantly reminded to focus all my attention and energy on my studies rather than being distracted by such gossip. However, while growing up, I would often sit in those spaces where two adults were talking and would attentively listen to them for hours without any interruption. I would also pretend to do any reading, sketching, or colouring so that it appeared that my primary engagement is somewhere else. I found these conversations really amusing and informative but I could never participate in them, if I had to continue my expected child-like behaviour.

For leisure activities, most village children would actively contribute in household work as an interactive and bonding activity with their families. There was a gendered distribution of work around the access to private and public areas. Boys used to do work which required them to leave the house such as getting firewood, cutting grass, taking cows to graze, and so on. Girls, on the other hand, used to do work within the boundaries of their homes, such as cooking, pounding rice, sweeping the floors, picking up *gobar* (cowdung), and so on. This work was part of their everyday life experiences and they did it along with their formal schooling. It emerged from the above mentioned experiences that the essential element of growing up in the observed community was engagement with household work and taking responsibilities of the daily chores. Vasanta (2004) and Raman (2000) also challenge the notion of an *ideal childhood* as essentially a middle-class, white, male, and urban childhood. Such a notion of childhood considers a child vulnerable and dependent (in need of protection), irresponsible, and ignorant. Such a childhood has a eurocentric thrust, and the experiences of non-western societies are different, where the transition from childhood to adulthood is more fluid, where the child's world and the adult's world are not so separate.

Saraswathi (1999) also postulates that the "adolescence is the invention of a technological, industrial society that is marked by a discontinuity between childhood and adulthood" (214). The presence of adolescence varies according to gender and class identities of individuals. Child-adult continuity is mostly evident in girls across all classes (except in high economic classes) as they are socialized early into taking the nurturance and care roles in a patriarchal society. It is ambiguous and mixed in males. In the lower economic strata, there is less possibility of adolescence as there is a compelling need to earn before one can learn, but in high economic classes, it can be found, due to indulgent, consumerist, and permissive child rearing practices.

During my stay, I also observed that both girls and boys were treated with love, care, and equality in terms of food and work distribution but there was a discrepancy in choice of schools for girls and boys. Girls of a very young age were aware of the preferential treatment that their brothers got, being sent to good private schools while the girls were sent to government schools. According to a survey (Mountain children) conducted by SIDH in 2004, it was found that many parents felt that it was not safe to send girls to distant places for education and that higher

education of girls would create problems for future marital prospects of these girls. Most of the girls did not see these practices as discriminatory, and justified them by saying that their brothers would be the future bread winners of the family while girls would eventually leave their natal homes.

Peer Interactions

When I started teaching, many children asked me about my *jati* or my full name and tried to place it in the locally acknowledged caste hierarchy. Even a child as young as of six or seven years of age had the awareness of belonging to a specific caste group and the sense of supremacy over the low castes. Once a child offered me *daal* and *bhaat* (pulses and rice) that his grandmother had made at home but, before I could taste it, I was warned by other children as the child was from '*dhol bajane waale*' community (low caste people who play musical instrument for livelihood). While interacting with the children, I found out that the awareness about caste existed in the way people referred to certain caste groups (to ridicule, insult, or exclude them in any task), practice of maintaining separate utensils and places for eating, offering water or tea to the guests, restrictions of certain caste groups in the village fairs or local festival celebration and the occupational fixedness of certain caste groups. Certain references to children belonging to low caste like '*Neech jati*' (Low caste), '*Aujar banana waale*' (those who make metal instruments) were naturalized and routinized practices amongst children. However, these distinctions were diluted while playing outdoor games like *steppu* (a game which involves throwing of a marble and hopping on numbered patterns on the floor), cricket or *kanche* (a game of marbles) and travelling for the school, but it manifested strongly while sharing food or visiting each other's houses.

For some children, travelling from their villages to the school was also the time to catch up with each other, discuss television programmes, their favourite cricketers or film stars and they often used to stop at fixed spots (resting spaces) to eat some fruit, *makki* or *mandua ki roti* (corn or ragi chapatis). While going back from school, however, there used to be a hurry and anxiety in their walk as they worried about unexpected rain or impending dark. They always travelled in small groups of four or five, all residing in a particular village. On their birthdays, they used to relish *patiyud pakode* (colocasia root/taro root fried appetizers), *dhaniya pudina chatni* (garnish of cilantro and coriander), *aloo sabzi* (potato vegetable), *aate/jhangore ki kheer* (wheat based sweet pudding). Birthdays were celebrated with the immediate and extended family members and there was no practice of cutting cake or exchanging gifts.

It was very different from the my 'hurried' childhood experiences where life at home revolved around finishing the assigned tasks of schools, attending tuition classes, preparing for examinations and practicing, memorizing chapters of textbooks to excel in academics. There was absolutely no time to play indigenous games with neighbourhood friends or even interact with them as whatever spare

time I got was used to watch television or in hobby classes. Each and every hour of my life at home was structured to the minutest detail and there was no moment of taking it easy or exercising my choice or flexibility. Celebration of events like birthdays or academic success included outings to eating joints and shopping sprees.

Expectations from Schooling

While growing up, I always experienced that my parents' appreciation, approval, and admiration was somehow tied to my academic performance at school. The better I was able to score, or, best of all, became class topper, the better I could negotiate the boundaries of watching television, eating my favourite dishes or shopping for new clothes. Every year, for a few days after the declaration of annual results, I was even excused from certain household chores like putting away the dishes after having food, placing my clean and ironed clothes in the almirah, helping my mother serve food to other family members, and so on. These incentives and pampering were often accompanied by regular reminders that excellent academic performance has to be continued.

During my stay in the village, many parents shared their concerns with the school teachers that their children had started refraining from doing household work and looked at it with disgust and humiliation, often labelling it as '*gunvar waala kaam*' (work of an illiterate). Parents felt that formal schooling and the learning of English had uprooted their children from their community way of living, and they refrain from speaking their local language at homes also. Many children (especially boys) wanted to go for higher studies to Mussoorie or Delhi to secure good jobs as it would improve their social mobility in their communities. The children also did not want to contribute in the traditional occupational work or agricultural practices of their families and accorded more respect and inclination towards the mental work rather than menial work.

The National Curriculum Framework (NCF) 2005, in its position paper on 'Aims of Education' (2006) states that education imparted to young learners should derive from their local milieu, based on their prior experiences and in their local languages. The process of education needs to be considerate of multiple social identities of children and representative of diverse facets of their social realities so as to strengthen the home-school continuity and provide an enabling space where children are given a voice and agency in their construction of knowledge. Only by acknowledging and accepting that the learners are coming to school with valuable observations and experiences, can the knowledge be made more meaningful and relevant for the learners. The process of educating also consists of engagement of learners with certain skills, values and attitudes, so as they can grow into becoming aware, sensitive and responsible members of the society. My experience at SIDH made me question the very processes of selection and organization of knowledge in a school curriculum: Is it focused on the need to establish a harmonious connection

with nature? Does it allow the learner to take pride in her community's roots? Is it creating a separation and hierarchy between mental and menial work? Is it getting too narrow and defining its objectives on only utilitarian terms and according to the needs of positive economy?

Conclusion

Childhood in the *Garhwal* region of Uttarakhand seemed to be in a transition phase where formal schooling has introduced new perceptions and attitudes, while the day-to-day lives of children are still rooted in the community participation. The study of childhood experiences of this region gives insights on how it feels like to be a member of that community and how it shapes their beliefs, ideas, and identities. It also highlights the diversity and differences in growing up in a particular social condition and how it challenges the certain taken for granted aspects of childhood: involvement in work, engagement with peers, leisure activities, and aspirations from formal schooling. This study stresses the lacunae in the historical and sociological study of childhood where the voices and experiences of children are not given a credible and legitimate stance. The inclusion of conceptions about childhood, emerging from everyday experiences of children in a social community, would help teachers and educators device such curriculum frameworks and policies which are genuinely child-centred and not just adult interpretations of the universal and normative childhood experiences.

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Part V

Conclusion

Chapter 22

Conclusion



Veena Kapur and Sudipta Ghose

A Few Last Words

This volume has brought together twenty-one chapters that study the varying facets of education and the challenges it faces as a legacy of globalization and digitization. The contemporary educational space is analyzed while trying to address the issues of theoretical and practical relevance. The four sections of the book have elaborated upon four different themes: digitization; the new age classroom; inclusiveness in education; and teacher input and field experiences. The themes are situated in theoretical understanding and informed practice, while focusing on building multiple perspectives on education. There has been a conscious attempt at creating a dialogue between theory and practice: ideas and inputs from research and pedagogy were made available to the practitioner, while theorists were informed about the constraints and hurdles encountered while implementing new ideas. The reflection and questioning of experiences and insights that emanate from praxis can be configured and coalesced into viable alternatives.

Educational discourse is consumed with discussions on some crucial issues and concerns. In this section, the editors include some of the insights gained through the attempt to study education. The common themes that emerge from the discussions focus primarily on:

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- transforming the conventional classroom through new teaching strategies;
- using technology integrated teaching learning processes in fostering the interns conceptual understanding;
- the need for Education systems to be intertwined with inclusive practices; and
- the voice of the practitioner being integral in gaining insights into the theory and its viability in praxis of education.

Transforming the Conventional Classroom Through New Teaching Strategies

The information-intensive global economy has impacted the transaction of knowledge in the formal education system. To succeed in life the learner requires different skills and knowledge than those which are required for academic success. Classrooms and teaching strategies need to be reconfigured to focus on learning rather than teaching, with the learner as the initiator of the learning process. New strategies for learning in the knowledge society not only invigorate learning and make it exciting, but foster concentration, focus, analysis, and understanding, while building learning across the curriculum. Formative assessment, with its more constructive view of errors, seeks to customize learning instead of labelling the learner.

The traditional classroom practices were based on the maxim ‘one size fits all’, thereby standardizing teaching–learning practices. The uniqueness of each learner’s abilities and needs was not recognized nor was learning adapted to this awareness. Redesigning the classroom is essential in the context of developing, in learners, the ability to communicate, share, use information to solve complex problems, adapt, and innovate in response to the new demands, as well as developing skills needed to negotiate the challenges posed by the twenty-first century (Griffin et al. 2012). Moreover, it is essential to adopt classroom pedagogies that stimulate the spirit of enquiry and analytical thinking in learners instead of passive learning and rote memorization. Overt dependence on the textbook for content and on examination-oriented teaching, therefore, needs to be replaced with instructional methods that give space for actively engaging the learner. There are pockets of change in education systems across nations, but it is systemic change that is needed.

Using Technology-Integrated Teaching–Learning Processes in Fostering the Conceptual Understanding of Interns

The emergence of technology has changed the way we access and process information, and, consequently, the ways in which we learn. Technology-driven learning approaches are more engaging, relevant, and facilitate collaborative learning. It ensures active participation of the learner, who, step-by-step, constructs

understanding as he/she uses technology. Within the new structures of education, teachers and teacher educators need to learn to use these new technologies. Therefore, teacher education programmes need to focus on imparting technological skills to their interns so that they are able to accept challenges of imparting new learning in schools. As a facilitator, the teacher educator/teacher cannot afford to ignore the skills required to integrate technology with pedagogy, in order to harness learner engagement.

The Need for Education Systems to Be Intertwined with Inclusive Practices

Beyond enhancing their repertoire, teachers and teacher educators need to work towards creating more inclusive school and educational settings. Readers would concur that divisive practices are a thing of the past and detrimental to the society at large. Inclusive practices, on the other hand, facilitate the development of a well-rounded personality. Central to the creation of an inclusive society is the appreciation of diversity, enabling the shift from labelling and social exclusion to acceptance and inclusion, thus imbuing social discourse with flexibility, and tolerance for differences of opinion. Institutions of learning are predicated on the development of the potential of all children while accepting their differences.

The Voice of the Practitioner Being Integral in Gaining Insights into Theory and Its Viability in Praxis of Education

The practitioner's insight into the nuances of his/her experiences in the field is a process of exploring theories and testing their efficacy in practice. Educationists need to know the challenges and harsh realities of the field while the practitioner needs to ground his practice in theoretical constructs. The discrepancy between theory and practice can be examined in the field/laboratory. In their reflections, there is ample space for educationists to make theories relevant. School and teacher-education partnerships help bridge this gap between theory and practice, and provide an environment in which collaboration between teacher-educators and school practitioners can foster shared knowledge, professional growth, and progressive methods of teaching that are grounded in practice. It is worth noting that many professions, including law, medicine, psychology, and business help candidates bridge the gap between theory and practice, by developing their skills of reflection and close analysis. Highly successful teacher-education programmes too require their interns to develop case studies on students or write reflective journals on aspects of schools and teaching, by observing and examining student work. It is infinitely useful to experience classroom interactions, and analyze materials and practices of teaching, to understand how we can make theories relevant for the practicing teacher.

The Road Ahead

The next logical step is to study those facets of education that can be incorporated in educational policy documents, making education more relevant and aligned to the needs that emerge with the changing global context.

Learning by Doing

The Delors Commission Report (1996) had set the tone for the future of education, visualizing learning as going well beyond formal education. Though written over twenty years ago the learning from the report is relevant even today. It had presented a vision of education which advocated the concept of lifelong learning of teachers and learners. Learning throughout life acquires a greater significance today (Power 1997) when the patterns of life, education and its trends, and the world of work are experiencing a greater, and more rapid, transformation than ever before. Keeping pace with it is difficult for any educational system. However, the objectives and transaction of education, as well as its strategies and content, need to be revisited. The objective of education is not merely acquiring a specific body of knowledge; learning how to apply skills in new situations, while understanding and strengthening the linkages between theory and praxis, has gained greater relevance today.

The ‘learning by doing’ approach substantiates that education that is effective cannot be limited to the four walls of the classroom. It needs to be situated in the socio-cultural context of the learner. However, in reality, the learners’ maximum exposure to the community is via textbooks and videos; “children often learn about the rainforest, but not usually their own region’s forest, let alone the meadow right outside their classroom window” (Louv 2005). Learners need regular engagement with the society or community in which they live, developing a sense of ownership with it, learning about its economy, weather and agriculture. Education needs a context to be living and relevant, and the learners require a context that gives them a sense of belonging.

Teacher Education: Theory and Praxis

Teacher education needs to reconfigure its academic rigor and praxis addressing the above areas of concern. Research (Albion 1999; Kalantzis and Cope 2010; Zientek 2007) has stressed the pivotal role teachers play in designing a powerful learning environment. Therefore, the education of teachers needs to be organized with considerable thought. Approaches to teacher education differ vastly across different cultures and contexts but there is one principle that is common to all established

teacher-education programmes: that is, the focus placed on the learner, who forms the core of their educational endeavours. The National Academy of Education Committee on Teacher Education (as cited in Darling-Hammond 2006) articulated the following framework that forms the core statement of standards for teaching:

- Knowledge of learners and how they learn and develop within social contexts
- Understanding curriculum and goals, including subject matter and skills
- Understanding skills for teaching including pedagogical content knowledge and skills to teach learners of diverse ability, understanding assessment and how to manage a productive classroom

It is important that teacher-educators and policy-makers for teacher-education programmes understand the importance of these core standards for teaching and organize the experiences of interns so that they learn to integrate and apply these insights skilfully in their understanding of classroom practices.

Theoretical courses need to be cohesively designed, integrating theory with praxis in the school/the field, while academic rigor needs to intersect with its application in the classrooms. The classrooms for teaching-internship should be selected because they model the kind of practice that is discussed in the academic courses (Darling-Hammond 2006). However, in India, teacher-education programmes have to rely on whichever school the local government bodies allot to them. Internship loses its impact if theory and praxis cannot be integrated. Courses and internship should be coherently integrated so that interns can forge linkages between theory and practice, and perceive the elaboration of theory in practice. To successfully implement theory in praxis requires deft planning at the programme development stage. Leaving the interns on their own, with no teacher-educator support to make sense of disconnected school experiences, is a futile exercise. Interns need support in linking these experiences and it is the teacher-educator who can channelize teaching-learning towards fostering insights and linkages between theory and praxis. These programmes need to prepare their interns to turn analysis of school experience into action by applying what they are learning into lesson plans. These attempts can become very educative when followed by systematic reflections on the teaching experience in the schools. The interns need to be given feedback by the teacher-educator with opportunities to improve. The experiential lessons that the interns receive during their internship should outweigh the learning from the theoretical course work. In policy, this holds true but this maxim can be achieved in practice only if the courses are well planned and the workload of teacher-educators is not phenomenally high.

Teacher-educators and teacher-education programmes hold the key to preparing and educating teachers who are committed to the profession of teaching, imbued with theoretical insights, practical understanding, and the ability to adapt to changing times. It is important that teachers are open to new ideas that develop in the socio-political matrix, and have the ability to adapt the insights gained from them into their classroom practices.

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