

Chapter 3

Multimodal Composing in a Multilingual Classroom: Design-Based Research and Embodied Systemic Functional Linguistics



**Maverick Y. Zhang, Ruth Harman, Sahar Aghasafari,
and Melissa B. Delahunty**

Abstract Informed by design-based research (DBR) and an embodied systemic functional linguistics (SFL) approach, this chapter details how three university educators and an ESOL teacher worked collaboratively to design and implement an embodied multimodal curriculum in a mixed level high school ESL classroom. Data analysis includes intertextual exploration and SFL-informed ideational analysis and logico-semantic analysis of classroom activities and students' final written and artwork. Findings focus on the strengths and challenges in using an SFL-informed embodied curriculum to support multilingual learners in multimodal composing and grappling with globalization and immigration issues. Implications point to the affordances of DBR for bringing high-level theories such as SFL and multimodality into practice and the need for continued refinement in developing an embodied teaching/learning approach with multilingual learners.

Keywords Multimodal composing · Systemic functional linguistics · Design-based research · Immigration · Multilingual learners

3.1 Introduction

Despite recent research on the importance of embodied learning and culturally sustaining instruction (Cummins and Early 2010; DeSutter and Stief 2017; Paris

M. Y. Zhang · R. Harman (✉)
Department of Language and Literacy Education, The University of Georgia, Athens, GA 30602, USA
e-mail: rharman@uga.edu

M. Y. Zhang
e-mail: maverickzhang@uga.edu

S. Aghasafari
Art Education, The University of Georgia, Athens, GA 30602, USA

M. B. Delahunty
Cedar Shoals High School, Athens, USA

2012), high stakes school reform and curriculum mandates too often promote teaching- to-the-test practices that effectively silence the cultural and multimodal repertoires of an increasingly multilingual student population (Flores and Schissel 2014; Molle et al. 2015; Paris 2012). Often lacking are pedagogic practices that afford learners with tangible resources “to appropriate and challenge dominant knowledge domains in our increasingly discursive society” (Harman and Simmons 2014, p. 3). In addition, texts and images in school textbooks often fail to incorporate lived experiences and identifications of multilingual youth (e.g., Chun 2015; Kubota 2004). As many scholars (e.g., Cummins and Early 2010; Harman and Varga-Dobai 2012; Ladson-Billings 2014) indicated, multilingual youth can feel minoritized or challenged both inside and outside the classroom as a result.

Pedagogies developed from systemic functional linguistics (SFL; Halliday and Matthiesen 2004) have been integrated into language education in recent decades in ways that support multilingual learners in overcoming some of these daunting challenges. Critical SFL-based instruction has supported multilingual¹ learners in content areas such as history (de Oliveira 2011), science (Buxton et al. 2019), and English Language Arts (Gebhard 2019). These pedagogies, however, can be difficult for teachers to access due to the complex metalanguage (Harman 2018; Moore et al. 2018). Because of these strengths and challenges, the purpose of our study was to develop an accessible SFL-informed curriculum that could be used across grades and expanded over several iterations. Specifically, our research team, made up of a highly invested ESOL teacher and three university researchers, used design-based research (DBR; e.g., Reinking and Bradley 2008; Sandoval 2013) to design, implement, and reflect on an embodied multimodal curriculum for a mixed level group of high school multilingual learners.

Informed by theories and empirical research on multimodal composing (e.g., Cimasko and Shin 2017; Shin and Cimasko 2008) and embodied SFL instruction (Siffrinn and Harman 2019), our chapter provides details of a year-long research study in a large urban high school. We explore the curriculum design as well as how focal students responded to the semiotic resources (e.g. pictures, videos, maps) and embodied experiences (e.g., interviewing, performing, drawing) we provided to support mixed grade level learners in deepening their knowledge of immigration issues and informational writing in social studies. In the study, we attended to two interrelated research questions: How did focal multilingual learners respond to a multimodal curriculum in terms of their multimodal composing and intertextual resourcing? And in what ways did DBR support the design and implementation of the SFL- informed curriculum? Because of space constraints, in this chapter, we attend closely to our findings related to the first research question. The second

¹A wide variety of terms are used to describe learners in predominantly English language settings, but whose home language is other than English. These terms include “English language learners,” “English learners,” and “emergent multilingual learners,” among others. In this chapter, we use the term “multilingual learners” because it indicates our non-hierarchical perspective on learners and their flexible use of the available range of semiotic resources to make meaning. We avoid abbreviations that are also commonly in use (EL, ELL, EBL, etc.) as they can potentially dehumanize learners through their overuse.

question is addressed with details in our Curriculum and Methodology sections and a brief summary of key findings at the end.

3.2 Theoretical Framework

3.2.1 *SFL and Multimodality*

In the theory of SFL, language use is conceptualized as emerging from three simultaneous meaning systems that are generated in and generative of social contexts and interactions. The trinocular view of language includes three meaning systems: ideational (what a text is about), interpersonal (evaluation of who and what the text interacts with), and textual (how the text is organized depending on the channel of communication) (Halliday and Matthiesen 2004). Importantly, through the three metafunctions, SFL connects context, semantics, and lexico-grammatical resources, supporting the development of disciplinary instruction and learning that is developed through meaning-making activities (Schleppegrell 2018).

SFL has been used increasingly in the United States as a teaching and analytic resource in supporting advanced proficiency in first and second language literacy from elementary to higher education contexts (Gebhard 2019). Less research has conceptualized the pliability of SFL as a means to develop culturally sustaining pedagogies that support multilingual youth in conveying their insights through remixing of available modes (Harman and Burke 2020). Yet such dialogic and multimodal approaches (Hasan 2011; Paris 2012) afford learners pivotal resources to appropriate and challenge dominant knowledge domains. In the case of multilingual students, for example, their vast experience of semiotic brokering in their communities (e.g., translating, representing, negotiating) provide them with sophisticated discourse strategies and knowledge to be incorporated into the curriculum (Garcia 2009; Harman and Khote 2018; Molle et al. 2015; Pacheco 2012). Indeed, Unsworth (2006) asserts that “[i]t is now widely accepted that literacy and literacy pedagogy can no longer be confined to the realm of language alone” (p. 55). In other words, dynamic meaning-making needs to be supported through multi-semiotic and embodied instruction that invites all participants to take part in the classroom learning/teaching cycles.

Aligned with SFL, social semiotic theorists of multimodality (Kress 2010; Kress and van Leeuwen 2006) conceptualize meaning-making as emerging from the use of a wide range of modes or channels of communication (e.g., drawing, performance, oral argumentation) in everyday and specialized discourses. As socially shaped semiotic resources for making meaning, modes used in representation and communication can include but are not limited to images, writing, music, gestures, and speech (Kress 2010). To support and complement multimodal composing, our conceptual framework also draws from recent SFL research on embodiment (Harman

and Burke 2020; Siffrinn and Harman 2019) that values the affective and physical domains as key components in generating disciplinary knowledge and robust classroom relationships.

Overall, meaning-making and conceptual understanding emerge from the use and remixing of semiotic resources such as physical interaction through play or theater, music, images, and gestures. Ideologically, semiotic and material choices construct, convey, and privilege both normative and counter-hegemonic meanings. In a reflective multimodal curriculum, therefore, learners may learn to deconstruct and reconstruct the ideological and cultural assumptions inherent in given representations.

3.2.2 *Design-Based Research*

Researchers in design-based research (DBR; e.g., Moore et al. 2018; Sandoval 2013; Schoenfeld 2014) focus explicitly on bringing theories into practice to solve identified instructional and/or learning issues. In DBR studies, collaboration between researchers and classroom teachers is seen as a critical and indispensable component of the research design. In our case, we decided to use a DBR approach because SFL-informed pedagogies have long been criticized as too complex, not readily accessible to in-service and pre-service teachers. Among recent DBR studies, Moore et al.'s (2018) work is particularly relevant to our current study in the sense that it is focused on the theoretical and pedagogical issues of an SFL-informed genre pedagogy. With the help of DBR, the researchers worked closely with in-service teachers across 20 classrooms and five schools to develop SFL-based approaches to support the disciplinary learning of multilingual learners. In their conclusion, the researchers pointed out that “both SFL and DBR are especially suited to transdisciplinary work, where researchers from different perspectives collaborate” (p. 1045).

In our work, we drew upon previous work in DBR (e.g., Reinking and Bradley 2008; Edelson 2002; Moore et al. 2018; Schoenfeld 2014) in establishing five key characteristics as helpful in theorizing and designing our research:

- Targeted intervention in instructional context
- Research and practice as enhancing each other
- Goal-oriented and pragmatic approach (addressing identified issue in learning or teaching)
- Adaptive and iterative (involving iterative cycles)
- Methodologically inclusive and flexible

In our view, DBR, especially these five characteristics, supports the exploration of SFL-informed inquiry approaches. In the close collaboration among us—an ESOL educator, two applied linguists, and an art educator—we tried to reflect continually on the connections between research and practice. That is, we moved recursively from pragmatic considerations about the classroom context to higher-level theories of language and social semiotics. As Moore et al. (2018) pointed out, “DBR

offers a systematic way of operationalizing high-level theories, such as SFL, and supporting ... research that engages teachers and students in collaborative research” (p. 1023). Additionally, we felt that the adaptive and iterative nature of DBR (Reinking and Bradley 2008) aligned with our research purpose, our plan being to reframe/refine the approach and curriculum over several iterations. Ideally, our goal was to build a context-specific instructional theory, similar to what Moore et al. (2018) accomplished over three iterative cycles.

3.3 Curriculum and Methodology

3.3.1 *Research Context*

The year-long DBR study was conducted in a mixed level (grade 9 -11) ESOL class at a public high school in a small city located in the southeast of the U.S., as part of a two-year funded research initiative at the school. Participants of the study included 19 first-generation immigrant multilingual learners from Central and Latin American countries. The classroom teacher, the fourth author on this chapter, hereafter referred to as “Melissa,” self-identifies as a white American female from Columbus, Ohio. Ruth Harman, hereafter referred to as “Ruth,” is a university professor and self-identifies as an Irish female. The other two university educators, Maverick Y. Zhang and Sahar Aghasafari, self-identify as an Asian person and an Iranian female.

Similar to Moore et al. (2018), we approached our DBR study in three stages. We see our first stage, during the 2018 fall semester, as a pre-iteration, since it involved exploration of the classroom literacy practice at potential research sites through participant observation and field notes. It was during this stage that we determined through field notes and frequent consultations with Melissa that the main areas for our collaboration would be the following: students’ difficulty in writing cause and effect social studies essays; and lack of previous success in writing expository essays in English. Because Melissa had already been exposed to theories of SFL and multimodality in her graduate teacher training (see Harman et al. 2020), she agreed with the university researchers that an embodied SFL approach would be optimal use in designing the intervention for the mixed level student group. The second DBR stage, also our first iteration, was the implementation of the curriculum during the 2019 spring semester. Our planning and design of the curriculum developed from Melissa’s expert advice on what would work best with her multilingual students and our field notes from the pre-iteration stage. The third DBR stage, which happened simultaneously with our implementation of the curriculum, involved critical reflection on what we did during each curriculum week, which involved weekly meetings as a research team and several meetings after we had finished with the curriculum. Based on our critical reflections, we designed our second iteration of the project and began implementing it in spring 2020, which, unfortunately, was disrupted by the ongoing global pandemic. We hope to resume this iteration in spring 2021.

From a DBR perspective, curriculum designers need to take into consideration the sociocultural factors at play in the educational context and also the literature documenting previous research approaches, making a DBR practice “methodologically inclusive and flexible” (Reinking and Bradley 2008, p. 21). Our approach, therefore, developed from our year-long engagement with the school and classroom as well as from research informed by SFL and multimodality.

3.3.2 *Conjecture Map*

We started our curriculum design with conjecture mapping, “a means of specifying theoretically salient features of a learning environment design and mapping out how they are predicted to work together to produce desired outcomes” (Sandoval 2013, p. 2). In other words, the mapping helped us as designers in bridging theories and practices and in addressing specific social and/or instructional issues. In this study, the SFL-informed inquiry approach was based on two interconnected high-level conjunctures: writing develops from a set of multi-semiotic meaning-making processes, and teaching and learning of writing develop through co-construction of meanings and knowledge. To bridge these two high-level conjunctures with the purposes of our classroom teaching and learning practices, as well as the learning outcomes, we adapted the conjecture map from Sandoval (2013), as shown in Fig. 3.1 below.

Figure 3.1 shows how the mapping first laid out the two high-level conjunctures that would inform the design of the curriculum, viewed in DBR as the “design conjunctures”—how a design functions (Sandoval 2013). The second stage, the “mediating processes,” supported the team in thinking about the necessary resources, task structures, and discursive practices for the operationalization of the high-level conjunctures. For example, we established early on that an SFL-informed Embodied Teaching Learning Cycle (TLC; Siffrinn and Harman 2019) would support our learners in seeing writing as a multimodal and intertextual composing process.

Also illustrated in Fig. 3.1 above, the interconnected outcomes of the mapping were tied directly to the pedagogical goals of the intervention. In other words, the purpose was to support multilingual learners in deepening their disciplinary knowledge, their investment in multimodal composing, and their critical awareness of the socio-political ramifications of current globalization and immigration practices. A key outcome, therefore, was to support their “reading the word and the world,” as informed by Freire and Macedo’s (1987) critical literacy approach. Likewise, the third outcome “writing to the world” put focus in the design on meaningful writing and reading—making sense of—the ongoing sociopolitical contexts and taking actions to speak out and promote social justice (e.g., Chun 2015; Fairclough 2016).

Overall, the conjecture map helped the research team conceptualize how the higher-level conjunctures/theories would function in the design and make both theories and design accessible to a broader audience (e.g., teaching practitioners). To bring theory into practice, though, we also used an embodied TLC (Siffrinn and Harman

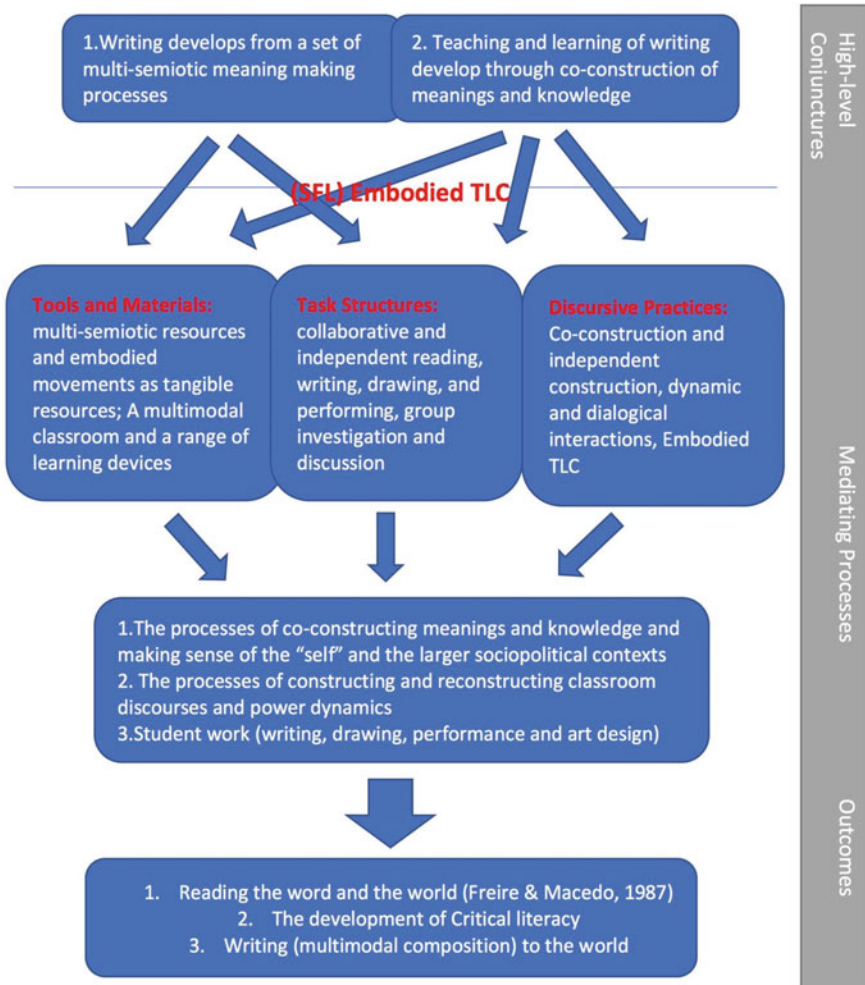


Fig. 3.1 Conjecture Map

2019) that, as shown in the conjecture map, functioned as a means to realize the “high-level conjectures,” “mediating processes,” and “discursive practices.”

3.3.3 Embodied Teaching-Learning Cycle

The embodied teaching-learning cycle (TLC; see Fig. 3.2 below) adapted from Siffrinn and Harman (2019) guided the overall planning of the curriculum unit as well as specific classroom activities. This pedagogic cycle was developed initially from the

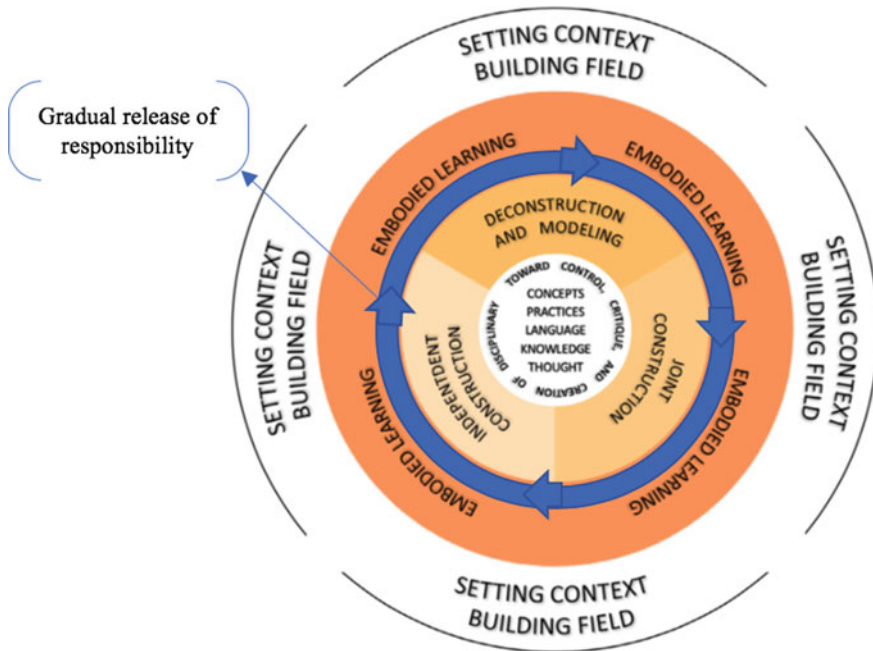


Fig. 3.2 Embodied TLC (adapted from Siffrinn and Harman 2019)

SFL-informed TLC (e.g., Derewianka and Jones 2016; Rothery and Stenglin 1995). In the more recent embodied TLC, physical and multi-semiotic resources function to support students in recursively moving from concrete to abstract understandings of disciplinary concepts. As indicated by Siffrinn and Harman (2019), bringing together physical-material activities with the semiotic affordances of languaging (Halliday 2005/2013), students are in a better position to gain “conscious and deliberate control” (Vygotsky 1986, p. 172) of disciplinary ways of doing and thinking. In other words, the cycle is designed to support students in embodied processes of learning while expanding their use of multi-semiotic resources to make meaning.

In the current study, as illustrated in Fig. 3.2, the research team used the “modeling and deconstruction” stage to support students in analyzing and using the expected patterns of meaning in the informational genre of reporting (e.g., Derewianka and Jones 2016). They also used multimodal activities such as drawing, performing, and discussing to involve students in active realization of the field of activity (e.g., issues related to immigration on the border). In the second stage, students and teachers jointly constructed and enacted texts that elaborated on their understanding of the immigration issues. Support from the teacher was gradually reduced after this point, “as the learners take increasing responsibility for independent use of a range of multi-semiotic resources” (Derewianka and Jones 2016, p. 54). In the final stage of the cycle, students used intertextual resources from the curriculum module to write their own reports about a country. Ideally, we saw this handover of responsibility functioning

as a gradual release of power—a potential restructuring of power relations in the classroom (e.g., Chun 2015) and an opportunity for multilingual learners to take ownership of the whole learning and doing processes (e.g., Cummins and Early 2010; Harman and Burke 2020).

3.3.4 Data Collection

To support investigation throughout the DBR study, we gathered data related specifically to the “mediating processes” in our conjecture map, which involved collection of video recordings of all classroom interactions and artifacts produced by student and teacher participants. As emphasized by Sandoval (2013), “documenting mediating processes in at least one of these two ways is required to connect aspects of a designed learning environment to observed outcomes of its use” (p. 6). Specifically, as shown in our conjecture map (see Fig. 3.1), the artifacts in this research were mostly students’ writing, drawing, video recorded performances, and art designs. We also manually collected students’ writing, drawing, and artwork throughout the project.

In order to document the design process, Maverick’s weekly reflections during the pre-iteration stage, as well as reflections written by Ruth, Sahar, and Melissa during the second stage of the iteration were collected to support reflection on our curriculum designing processes. In this way, our data collection aligned with Reinking and Bradley’s (2008) thoughts on rigorous DBR studies. They emphasize that in a rigorous DBR study, the researcher should consider “multiple sources of data for systematic analysis” (p. 54), through which researchers will be able to “acquire a deep understanding of the intervention and its effects” (p. 55).

3.3.5 Data Analysis

The first phase of analysis focused on the strengths and challenges of DBR work in our first iteration. Specifically, we analyzed the documented design, implementation, and critical reflection processes by using the approach advocated by Fairclough (1992) in terms of identifying crucial moments in our work—that is, moments of crisis that demonstrated where the DBR achieved and/or failed to achieve the pedagogical outcomes we intended to realize through the conjectural mapping.

The second phase of analysis used micro-level SFL-informed multimodal discourse analysis (e.g., O’Halloran 2005; Martin and Rose 2003; Martinec and Salway 2005) and intertextuality (Harman 2013; Bakhtin 1986) for a systematic analysis of multiple sources of data (Reinking and Bradley 2008). Through Systemic Functional multimodal discourse analysis (SF MDA), we were able to conceptualize theoretical and practical approaches to analyzing the range of configurations of spoken and written language, visual images, gestures, spatiality combinations in our

data. Within this line of inquiry, O'Halloran (2005) proposed systems for exploration of intersemiosis (i.e. experiential, logical, interpersonal, and textual) for the analysis of mathematical discourse including linguistic, symbolic, and visual elements that supported us in thinking of the interrelationships of image, verbal text, and other material resources. Informed by SF MDA perspectives on multi-semiotic meaning-making, we adapted Martinec and Salway's (2005) SFL-informed logico-semantic analytical framework to explore how these images and texts, as two different modes, enacted ideational meanings. For example, we examined how representational meanings in verbal and visual texts expanded, elaborated, and/or contradicted each other in ways that instantiated the intended macro genre (Martin 2008). In terms of intertextual analysis, we focused on connections between the students' final work and the classroom processes and multimodal artifacts used in the curriculum module, which supported us in seeing how students appropriated resources from the curriculum to construct/co-construct reports and narratives about immigration and globalization.

Overall, the two phases of analyses were interconnected as the second phase of analysis supported the first phase of analysis. For example, the intertextual exploration and SFL-informed ideational analysis and logico-semantic analysis showed the ways in which students were supported by multi-semiotic resources in their multimodal composing, which was an integral part of the DBR theoretical conjecture (Sandoval 2013).

3.4 Findings

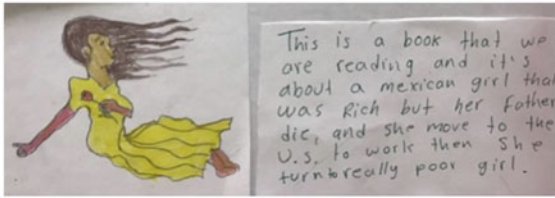
3.4.1 *Intertextual and Multimodal Patterns in Student Work*

To show how focal students responded to the curriculum design and to support analysis of the DBR theoretical conjecture (Sandoval 2013), this section focuses on the final multimodal work of four focal students: Ernesta, Mariana, Raul, and Sanchez.²

Picture 1 to Picture 5 in Fig. 3.3 below shows Ernesta, Mariana, and Sanchez's artistic and written work that they prepared for the final module of our curriculum, a public exhibit open to the community and school members. On Fridays each week, with the support of Sahar and Melissa, students drew and decided on how to juxtapose images and texts on large dividers for the exhibit. For example, Sanchez drew an image of "Esperanza," as shown in Picture 1, to establish a clear connection between his lived experiences and the narrative of the novel *Esperanza Rising*³ (Ryan 2000), which had been used as the textbook for every Friday's classroom reading.

²All names of students and schools are pseudonyms.

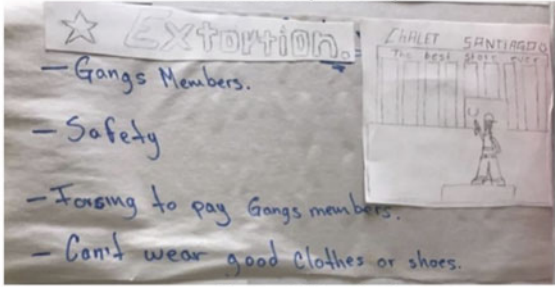
³*Esperanza Rising* (Ryan, 2000) is young adult literature about a young Mexican girl and her family's immigration experience from Mexico to the U.S.



Picture 1 (Sanchez)



Picture 3 (Mariana)



Picture 2 (Sanchez)



Picture 4 (Ernesta)



Picture 5 (Ernesta)

Fig. 3.3 Students’ Art Work On Story Panels (Mariana, Sanchez, and Ernesta)

A logico-semantic analysis of the multimodal panels showed that students, including Ernesta above, chose to draw images to expand, elaborate, and exemplify (Martinez and Salway 2005) their description of the push and pull factors of immigration in their written texts. In Picture 4 (Fig. 3.3), Ernesta drew an image of a constrained human body—a disciplined one (Foucault 1975/1979)—and a big strong hand as a powerful and meaningful representation of ongoing sociopolitical problems in Guatemala. The text “Violence” next to the image provides a general concept that could function as the theme of this particular representation, whereas the image gives the detailed information including the nature of the “violence” with specific gender(s) involved and the power dynamics between the “victims” and the “forces:”

the size of the fist is larger than the size of the person's entire body. This particular logico-semantic relationship between text(s) and image(s) is called "exemplification" (Martinec and Salway 2005, pp. 352–354), wherein the verbal text is specified and exemplified by the image. Ernesta's work opens up issues of gender, sexuality, body, discipline, and power relations (Foucault 1975/1979) that just the verbal text would not have provided. Similarly, the logico-semantic relationship of "exemplification" was also identified in Sanchez' work (see Picture 1 and Picture 2), where images of the protagonist in *Esperanza Rising* (Ryan 2000) and of an armed gang member are more general than the adjacent written texts, thus specified and exemplified by these texts.

To further explore connections between students' work and our curriculum, as mentioned previously, we also conducted an intertextual analysis. The analysis showed that in their final multimodal work for the public exhibit, students used intertextual resourcing (Harman 2013) from curriculum activities during the deconstruction and joint construction processes in the embodied TLC. For example, the drawing of maps as well as the mapping of the life trajectory in Ernesta's panel (Picture 5) were informed by the first-week collective storytelling session in which Maverick and Sahar shared their immigration experiences through different types of mapping. Likewise, Mariana's work (e.g., Picture 3) drew upon classroom activities in both week 1 and 2 such as the sharing of the immigrant educator stories (examples can be seen in Fig. 3.4 below) and classroom interactions around these stories. Specifically, through images of a dove, a tree in a closed jar, and the cultivation of plants, Mariana (see Picture 3) intertextually drew from curriculum activities to depict understandings of key issues that her country faced: lack of freedom, lack of educational resources, and poverty.

Our intertextual analysis of the final essays that students wrote for the curriculum also showed that curricular activities including modeling of interviews in the second week, sharing of immigration stories by the researchers and invited guests, and close deconstruction and joint construction of cause and effect essays supported students in developing their final written work. For example, the highlighted parts in Raul's essay below came from intertextual resourcing of materials and embodied storytelling from Maverick, as seen in Fig. 3.4. Likewise, in Sanchez's essay about push factors in Iran, he wrote that "The religion in Iran is very strict, so the woman can't be in the street or outside of their houses without the scarf," which directly drew upon Sahar's multimodal storytelling.

As evidenced above in Fig. 3.4, Raul cited an article by *South Morning China Post* (SMCP) journalist Zhuang Pinghui, the one that was provided both as an online and as a hard copy resource for students to prepare for their week 4 interview, as well as the final essay. In addition to simply viewing the "bad economy" in China as one of the push factors, Raul defined this "bad economy" as "low income and less job," and cited Maverick for further elaboration. Of course, Raul's textual representation of immigration also came from the intertextual resourcing of Maverick's storytelling, as highlighted in the transcripts (Fig. 3.4) above. Likewise, by drawing upon specific resources in Sahar's multimodal storytelling, Sanchez portrayed textual representations of religion, gender, and immigration in Iran with tangible details such as

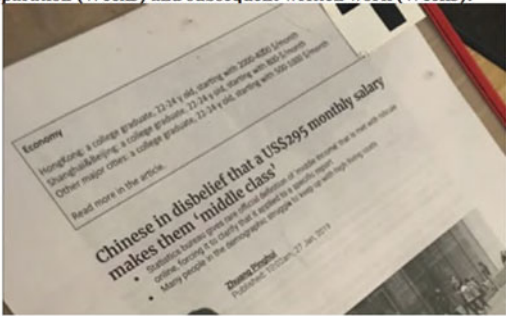
Students' written work	Transcripts and Classroom image
<p>Raul's written work focusing on immigration issues in China:</p> <p><i>In China, the population is 1,418,939,329 (Worldometers). The average person living in China makes 3,540 US dollars per year (Zhuang Pinghui). Every year, many people emigrate or leave from this country. In this report, I will ... These push factors are: overpopulation, less education opportunities and bad economy (low income and less jobs).</i></p> <p><i>The third push factor is the bad economy, which means low income and less jobs. The immigration numbers in China have increased in recent years because of the expensive life. The main cause of the bad economy is the imbalanced redistribution and distribution of money and resources (Maverick Zhang).</i></p>	<p>Transcripts of Story Telling (Week1) from Maverick:</p> <p><i>And then another problem was the economy. China has been developing really fast, but people were not really earning a lot of money. ... my parents, they were earning like 50USD/month, and that was like 2001, not too long ago. And ... when I was at your age, like 10 -12 years ago, my father was...he's a very good engineer, he works like 5 days a week, 8 hours per day ...he was earning like 700USD per month.</i></p> <p><i>But in Hong Kong, we still have problems. The biggest problem ... after I got my master's degree, I was earning like 2000-3000USD/month... which was pretty good in China. But the problem was the housing price... I looked at the housing price and I was like, noooo I can never afford a house... Coz in Hong Kong people are paying 200,000USD to buy a parking spot, not even a house. ...I felt like I should probably go somewhere else. That was also why a lot of people they left Hong Kong, even for people who were born in Hong Kong.</i></p> <p>A printed online article given to students for their interview preparation (Week3) and subsequent written work (Week5):</p> 

Fig. 3.4 Student's Written Work, Transcripts, and Classroom Image

“women,” “street,” “houses,” and “scarf,” functioning as everyday concrete entities in the ideational meaning system (e.g., Martin and Rose 2003).

Overall, we can see from our findings that although students' final papers are verbal English only to meet the expectations of the high school mandates, the writing is realized through an intertextual resourcing of multimodal activities that occurred earlier in the curriculum module.

3.4.2 Challenges in Design and Implementation

Based on the analysis of our curriculum design and implementation, we identified strengths of the approach (e.g., agentic intertextual resourcing; creative multimodal composing) and also pivotal challenges. Due to space constraints, this section focuses

only on the challenges and the critical role these challenges play (e.g., Reinking and Bradley 2008) in the design of our future iterations and refinement of the curriculum.

3.4.2.1 Balancing Disciplinary Knowledge and Literacy Development

By analyzing critical moments of tension and conflict (Fairclough 1992) in our design and implementation, we found that it was difficult for us to maintain a dual focus on disciplinary knowledge generation (e.g., social studies curriculum in 9th grade) and writing development for that particular discipline in a mixed level multilingual classroom (e.g., Gebhard 2019; Molle et al. 2015; Schleppegrell 2018). That is, most students in the class needed intensive scaffolding on aspects of cause and effect writing, which needed to be included within the content focus on immigration and globalization issues. In addition, most of our multilingual students were at different levels in reading and writing grade level disciplinary texts (e.g., lexico-grammatical choices, terminology). For example, 10th grade students labeled “newcomers” were put in the classroom alongside 11th grade bilingual learners who had spent most of their school lives in the U.S. As a result, within the limited time of instruction, we could not provide all students the language support they needed while building up their disciplinary knowledge. This challenge of integrating language and content is similar to those brought up by previous studies (e.g., de Oliveira and Schleppegrell 2015; Gebhard 2019) in addressing K-12 multilingual/bilingual learners’ various classroom needs and the need to achieve the level of English demanded by both new standards such as the U.S. Common Core and the learning of specific subjects. In our new iteration, we intend to attend more to the drafting of final papers in joint construction activities that will support more cohesion in students’ final written work.

3.4.2.2 Overstimulation with Multi-semiotic Resources

In week three, the students were given additional resources to prepare for an embodied interview activity, where they were going to interview guest speakers about their lives before and after immigration to the United States. Based on Melissa’s suggestion, the team prepared different learning centers where students rotated to avail themselves of Internet resources, reports on the countries of the guest speakers, and other visual artifacts (e.g., YouTube clips). The aim was to encourage the students to draw from the multimodal resources in preparing for their interviews and written reports on the countries of the guest speakers. However, several of the students chose not to use these resources, and their knowledge of countries such as Nigeria was limited during the interview activity. Through reflections on this critical moment (Fairclough 1992), we realized that the students were not motivated to work on this activity because they did not know the guest speakers and we had not shared our rationale for including these new people in the curriculum. On the contrary, because the team bonded with the students and were very clear about why they were sharing their immigration stories and written accounts of the push and pull factors affecting their lives and their

decisions to come to the United States, there was a high-level use of intertextual resourcing that the students use when directly writing about China, Iran, or Ireland, as evidenced in Fig. 3.4. Another issue that emerged in week 5 of the intervention was that students tended to forget the curriculum activities from the previous weeks. For example, when the students were asked to write their own reports in the independent stage of the embodied TLC, some completely lost track of the essays that had been jointly constructed with the research team. Instead, they sought new information that led to a loss of cumulative knowledge building about the countries and genre expectations in writing about them.

We then identified some key factors that led to the challenges in our approach. Because of tight Internet security in the school, the students could not be agentic in accessing online media platforms (e.g., Facebook, YouTube) to build on their knowledge of the different countries. One other factor that led to the failure at times to be consistent in the unfolding of the curriculum module was that as a research team, we offered the students too many resources. Although the students did not comment directly on this, this over-stimuli could have led to their choice to not include some of the resources. Overall, the problems could be related to the decision-making process (Edelson 2002) and power dynamics among research team members. It also could be related to the undue pressure on multilingual learners in high school, who need to fulfill highly difficult disciplinary tasks in a wide range of subject areas (e.g., Gebhard 2019; de Oliveira and Schleppegrell 2015).

3.5 Discussion and Implications

3.5.1 *Multimodality, Agency, and Critical Literacy*

Overall, findings from our study show that the embodied multimodal curriculum provided learners with an array of semiotic resources that students could use in creative, critical, and intertextual ways to convey their insights and lived experiences about immigration. Even some of the “newcomer” students can use English language “to generate new knowledge, create literature and art, and act on social realities” (Cummins and Early 2010, p. 42). Of course, we acknowledge that a wide variety of multimodal learning experiences are part of students’ everyday lives both inside and outside of school (e.g., Gebhard 2019), and we, therefore, do not claim that the students’ final multimodal work was simply a result of the support from our curriculum. However, our analysis did show explicit connections between the curriculum materials and students speaking out about complex social issues.

For example, the agentic choice of artifacts (see Fig. 3.3) supported multilingual learners in articulating their insights about globalization and immigration in meaningful and powerful ways, as elaborated in our logical-semantic analysis on and intertextual exploration of these semiotic choices. Students’ agency and deep insights could also be seen in their written work. Though none of the students were

exposed to theories of neo-Marxism or critiques of neoliberalism (e.g., Chun 2017) in our curriculum unit, as shown in our intertextual exploration, Raul cited “the imbalanced redistribution and distribution of money and resources” from Maverick as the main cause of the “bad economy.” Bringing news articles and researchers’ life stories into their final written work, Raul and many other students were indeed reading the word and the world (Freire and Macedo 1987), weaving multi-semiotic resources into their multimodal composition to explore issues around gender, economy, religion, and immigration from a global perspective.

We see the student work as a good starting point for opening up conversations in future iterations of the curriculum. We also see the affordances of using an embodied multimodal curriculum to position multilingual learners as (potential) civic agents of change and artistic remixers of knowledge (Paris and Alim 2014). As pointed out by Cummins and Early (2010), by bringing their identities in the creation of multimodal texts, students are encouraged to connect what is happening in the classroom with power relations circulating in school and society. This pedagogical move also challenges the devaluation of multilingual and marginalized students’ cultures and languages in our society at large.

3.5.2 DBR, High-Level Theories, and Future Iterations

Throughout this chapter, we can see that DBR supported us in conceptualizing and implementing complex approaches, such as SFL-informed multi-semiotic inquiry, in an authentic instructional context, which directly addressed the “intractable instructional problem[s]” (Reinking and Bradley 2008, p. 20) regarding high-level theories/conjectures such as SFL and multimodality.

More importantly, DBR encouraged us to reflect deeply and identify problems and challenges that need to be addressed in future iterations. For example, as shown in the findings, difficulties arose because of the overabundance of resources offered to the students within a limited period of time. In the next iteration of this work, our intent is to spend more weeks on each curriculum sequence and to refrain from introducing new speakers into the frame of teaching/learning. We also intend to limit the number of different semiotic resources and new concepts being brought into the classroom and focus more on the consistent modeling and joint constructing of these new concepts. To address challenges regarding the development of disciplinary knowledge and literacy, we will focus more on the processes of moving from co-construction to independent construction and provide more individualized model texts and instructions for students at different levels of proficiency (e.g., Gebhard 2019). We may also work on supporting learners in developing more systematic ways of note-taking and cumulative knowledge building, and tailor online resources to a more accessible format. In this way, we hope that students will be better supported to access and make sense of curriculum materials such as online videos and articles (e.g., Chun 2012, 2015).

Bearing the iterative nature of DBR (Reinking and Bradley 2008) in mind, we acknowledge that these problems and challenges may never go away as we keep moving through future iterative cycles. Instead of striving to find out “how it works,” we ask ourselves, “How can we find ways to make it work better?” That is, we acknowledge failures and aim to keep refining our approaches to better support multilingual learners in changing classroom contexts.

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Maverick Y. Zhang is a Ph.D. student in the Department of Language and Literacy Education at the University of Georgia. Their research interests include (but are not limited to) social semiotics, mediated discourse analysis, critical literacy pedagogies, embodied learning, and systemic functional linguistics (SFL). Their ongoing research addresses the development of critical literacy among multilingual learners, embodied multimodal curriculum, and mediated learning and teaching practices.

Ruth Harman is a professor in the Department of Language and Literacy Education at the University of Georgia. Her research and teaching focus on how best to support the literacy and language development of multilingual learners in K-12 classrooms, especially in the current climate of high stakes school reform and anti-immigration discourses. She has published in three overlapping areas that relate to this focus: systemic functional linguistics (SFL) and SFL-informed genre pedagogy, critical performative pedagogy (CPP) and youth participatory action research, and critical discourse analysis as a tool to challenge social inequity.

Sahar Aghasafari is a Ph.D. student in Art Education in the Franklin College of Arts and Science Lamar Dodd School of Art at the University of Georgia. Her research is an interdisciplinary study of visual arts and science. The purpose of her research is to integrate visual arts to help student interest and engagement in biology among emergent bi/multilingual high school youth.

Melissa B. Delahunty is an ESOL teacher at Cedar Shoals High School.