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A Case Study of Experiences with Transmediation for a Student with Learning Disabilities

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Article abstract

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Abstract

This case study explored the experiences with transmediation by a fourth grade student with learning disabilities (LD) and his teacher. Findings revealed that the student encountered mixed responses to his practices by the classroom community. Underlying these perspectives were issues of social capital contributing to the power dynamics of the classroom, and two contrastive provincial curriculum documents guiding classroom literacy instruction and assessment. Drawing on these findings, we discuss the nuances and complexities of transmediation for students with diverse learning needs.

Keywords: multimodality, learning disabilities, learning differences, inclusive pedagogy, multiliteracies, technology

Introduction

School districts in British Columbia have been using a language arts curriculum that strongly emphasized multimodal and digital literacies in elementary classrooms since September 2016 (BC Ministry of Education, 2016a). Students are expected to engage with a variety of online and offline resources in their academic work. Consequently, teachers are responsible for instructing students how to synthesize and make meaning from pictures, sound, movies, bodily gestures, and print (BC Ministry of Education, 2019). The changes in the curriculum reframe literacy as multimodal (e.g., Cope & Kalantzis, 2021; The New London Group, 1996) and language learning is part of an embodied experience with a variety of semiotic "modes, means, and materials" in addition to reading and writing alphabetic print (Kress, 1997, p. 92).

In contrast, instructional guidelines from the province's Special Education Manual of Policies, Procedures and Guidelines (BC Ministry of Education, 2016b) continue to be centered on a print-based approach to language arts instruction, which potentially perpetuates a deficit viewpoint of literacy learning. Print-based approaches privilege the communication and comprehension of alphabetic print in literacy activities (Purcell-Gates, Jacobson, Degener, 2004). According to the BC Ministry of Education (2016b), students with learning disabilities (LD) experience difficulties with "oral language (e.g., listening, speaking, understanding), reading (e.g., decoding, phonetic knowledge, word recognition, comprehension), and written language (e.g., spelling and written expression)" (p. 47).

Unlike the language arts curriculum for students without disabilities, there is little to no mention of competencies with other modes of meaning making. The Manual specifies that LD is characterized as "academic under-achievement," or "achievement that was maintained only by unusually high levels of effort and support" (ibid). Consequently, students with LD and their teachers are caught between two competing models of literacy instruction: one that is print-based and one that is multimodal.

Drawing from a larger single-case study, this article highlights a fourth grade male student's experiences with transmediation and his teacher's response to his work. Despite the recent framing of multimodality as a form of inclusive pedagogy (Drewry et al., 2019), tensions and challenges often arose during the student's design processes, partly because of the contrasting literacy frameworks in BC.

Perspectives

This study is framed by two sociocultural perspectives, one of literacy (e.g., Barton & Hamilton, 2001; Street, 2001) and one of disability (Collins & Ferri, 2016; Poplin & Phillips, 1993). These two perspectives are brought together to understand the student's multimodal meaning making practices in the classroom as well as the factors that promoted or limited these practices. Literacy is viewed as a social practice patterned by social and cultural values, relationships, attitudes, and feelings (Lemley et al., 2019; Perry, 2012). Literacy is also understood as inherently multimodal as individuals utilize a variety of modes (e.g., visuals, sound, movies, bodily gestures, and print) to make and communicate meaning through a process called transmediation (Kress, 1997; 2010). Sociocultural theory in education explores how longstanding structures (e.g., curriculum and assessments) in schooling as well as collective beliefs about academic achievement impacted pedagogical practices and learning experiences (Iannacci, 2018; Trent et al., 1998). The common perspective of disability in the language arts revolves around students' difficulties with print, which framed literacy as "something that one either has or does not have; people are either literate or illiterate, and those who are illiterate are deficient" (Perry, 2012, p. 53). As such, the two sociocultural perspectives of literacy and disability often overlap. The study also drew from views of multimodality, multiliteracies pedagogy, and dis/ability perspectives of literacy. These perspectives inform how the student's transmediative practices in the classroom were shaped by mindsets about literacy, disability, and pedagogy.

Multimodal and Multiliteracies Pedagogy

The focus of this article is a student's experience of multimodal literacies and multiliteracies pedagogy. Multimodal pedagogy is understood as the various modalities a teacher implements during literacy instruction to represent curricular content (Lim et al., 2021). As a result, students design and create their own multimodal texts as part of their learning experiences and transmediative practices. Transmediation is an approximation of signs, which do not have a direct translation from one mode to another (e.g., from music to dance). Students constantly engage in transmediation as they learn and translate language into different modalities according to their interests, such as through art, visual

analysis, storyboarding, and digital texts (McCormick, 2011; Mills, 2011). In their latest work, Cope and Kalantzis (2021) adds that when students are switching from mode to mode, especially in a digital environment, they are enacting a form of "transpositional grammar". They define transpositional grammar as creating a more comprehensive meaning out of the multiple forms of expression in a shared language. This translation of multiple modes into a shared language further shifts collective understandings of literacy to include forms of meaning that may not necessarily be seen as traditional academic literacy, but are made more accessible through digital tools as students find more opportunities to create multimodal texts.

As digital texts are increasingly part of multimodal practices in the classroom (Liang & Lim, 2020), this article also draws from multiliteracies. The New London Group (1996) defines multiliteracies as a way of broadening definitions of literacy to recognize the growing uses of technology and the digital both in and outside of schooling. This results in a pedagogical framework that aimed to help mobilize multiliteracies in the classroom by shifting from a passive consumption of the digital to becoming more active participants with a goal of strengthening critical thinking and engagement with the wider society (Liang & Lim, 2020). Hong and Hua (2020) sum up multiliteracies pedagogy as "extend[ing] the teaching and learning process by incorporating what is new in the existing environment" (p. 43). As such, students engage in multimodal practices as they consume and produce texts as "they make meaning concerning their identities and beliefs about the present and future world" (Hong & Hua, 2020, p. 44). In essence, multiliteracies pedagogy not only reshapes collective understandings about literacy instruction in the classroom, it also promotes opportunities for students to engage in multimodal practices that are more authentic to their identities, interests, and relationships with their worlds outside of school. As the students bring their out-of-school experiences with technology and a variety of modes into the classroom, teachers are also challenged to become more innovative in their literacy instruction, which potentially invites both teachers and students to be more flexible and creative in their teaching and learning.

This flexible mindset about literacy in the classroom also positions multiliteracies to be a form of inclusive pedagogy. Inclusive pedagogy seeks to avoid labeling students by their literacy abilities and considered a "dynamic enterprise that actively involves students in their learning" (Drewry et al., 2019, p. 64). Students struggling with print-based activities need flexible approaches to literacy that encourage their proficiencies with other modes (Cope & Kalantzis, 2009; Drewry et al., 2019; Simpson & Walsh, 2014). Therefore, multiliteracies and multimodality inform this study by illuminating how the use of multiple modes and media during instruction can promote inclusion of students with disabilities by broadening what is considered to be academic forms of literacy.

Sociocultural Perspective of Dis/ability

One of the issues with the LD designation has been that the students' individual learning and literacy experiences have not been seen as unique. LD has generally been one of the largest categorizations of students in BC (about 3% of the K-12 student population) (BC Ministry of Education, 2017). Yet there are a wide range of experiences with reading,

writing, mathematics, and socioemotional conditions that are grouped under this broad category. More importantly, LD is often understood as a neurological impairment in cognitive processes (Penney et al., 2018; Trent et al., 1998) rather than critical reflections of the structures (e.g., curriculum, assessments, and discourses) that minimize opportunities for academic achievement (Iannacci, 2018).

A sociocultural perspective of disability aims to dismantle prevailing notions of disability as solely a cognitive or biological impairment by addressing the contexts that shape how a disability is manifested in the classroom. This is particularly important for students with LD because their disability is often described as "invisible" (Gunderson & Siegel, 2001; Learning Disabilities Association of Canada, 2017) and only detected after schooling began (BC Ministry of Education, 2016b). Gallagher, Connor, and Ferri (2014) note that the identification of disability categories requires "the drawing of arbitrary lines and distinctions" (p. 1,124) that are often grounded in societal values of literacy as indicators of intelligence and competency, especially with alphabetic print. Iannacci (2018) points out that there has been sparse attention paid to curricula for students with disabilities, which means that literacy pedagogy remains "unchallenged" (p. 9). There has been a greater focus on remediation, which then overshadows the students' literacy practices with other modalities that are not print-centric (Mock & Hildenbrand, 2013). Similarly, literacy assessments have long privileged print-based practices. Broadfoot (2002) writes that assessments are laden in social, cultural, and historical values stemming from dominant perspectives of "educational knowledge" (p. 105). Consequently, literacy assessments reinforce the notion of students as struggling with language rather than emphasizing their competencies with other modalities (Anderson, Stewart, & Kachorsky, 2017). In the context of this study, a sociocultural viewpoint of disability bridges gaps in understanding how perceptions of disability are manifested (or not) in the classroom environment. These nuanced viewpoints about literacy and disability also frame how existing structures that categorize students are still prevalent even as perspectives of literacy have been changing.

Literature Review

This review focuses on pedagogical approaches to multimodality that shape students' literacy experiences in the classroom as well as an exploration of students' transmediative practices. In particular, multimodality has been expanded as a way to promote inclusion/ inclusive pedagogies, especially given the increasing prominence of digital technology in the classroom. Traditionally for students with LD, their teachers' dominant practices have often relied on print-based practices, such as remediation in reading, writing, and oral language skills (Mason & Graham, 2008; McCulley et al., 2013). Elkins (2002) observed that these more conventional forms of literacy intervention with print did not necessarily address the complex and unique learning needs of students with LD. Instead, researchers have argued for a shift towards seeing literacy instruction as a means to promote inclusivity that was also grounded in learner-centered approaches (McGhie-Richmond & de Bruin, 2015; Naraian, 2019). Rather than focusing solely on print, Stein (2008) argued that instructional activities must have "multiple entry points for meaning-making" (p. 335). Students also needed multiple opportunities to practice

working with a variety of modes as part of the shift away from seeing students as deficient in their meaning-making. A multimodality perspective recognized that students experience different "histories and competencies" with each mode, which meant that meaning-making was a highly personal and complex process (Stein, 2008, p. 122). This point was particularly salient in reframing the literacy experiences of students with LD as complex, nuanced, and unique.

New technologies and media have been viewed as a means for inclusive pedagogy. Historically, technological and information devices for students with LD were seen as assistive technologies to help bridge the gap in their challenges with print or other skillsets (Naraian & Surabian, 2014). Now however, new technologies have been positioned as tools that promoted independence, participation, and motivation for more positive learning experiences beyond "normative skill expectations" for students with LD (Blackhurst, 2005; Bruce et al., 2013; Laidlaw & O'Mara, 2015). For example, Burkes and Hughes (2017) observed in their study that technological tools like tablets can foster a more inclusive environment for students with disabilities because they can help them improve learning outcomes.

As students continue to be exposed to more forms of technology in the classroom, they utilize many modes to create texts, resulting in a stronger focus on the design process and not just the final product (Bearne, 2009; Faux, 2005; Rowsell, 2013). In this context, design in multimodality and multiliteracies is seen as the ability to create new texts by (re)mixing a variety of modes that suit the students' interests in response to the curricular content and the teachers' instruction (Cope & Kalantzis, 2021; Hong & Hua, 2020). This results in innovative transmediative practices by students that further support their literacy learning (Nash, 2018). For example, Mills' (2011) study about young children and their drawings of scenes from *The BFG* deepened students' analyses of the characters and sparked rich conversations between the teacher and the students. McGinnis (2020) pointed out that transmediation can also evoke powerful life narratives, such as in the case of her study's focus on a student who migrated from Honduras without her family. The student went through a process of writing in English and in Spanish, selecting images, storyboarding, and editing to produce an autobiographical text that raised awareness of sociopolitical conflict. Dahlström (2021) suggested that students' prior knowledge of other texts and technology (e.g., social media, television, music, computers, etc.) was "crucial for mastering" (p. 403) the creation of new texts during transmediation. However, it was important to note that all students had unique experiences with transmediation. In these aforementioned studies about multimodality and transmediation, students from diverse backgrounds (e.g., immigrant or refugee status, gender, age, sociolinguistic background, and disability) utilized a variety of familiar skills and learned new skills through in-class experimentation and from teacher instruction to produce their new artifacts (Colton, 2021; Lotherington & Jensen, 2011; Smith et al., 2017; Smith et al., 2020). Colton (2021) suggested that transmediation should also be viewed as part of inclusive pedagogy because students can represent their "cultural knowledge through digital storytelling by combining traditional forms of communication with new forms of digital production" (p. 26). Thus, transmediation can be seen as the foundation of inclusivity in the classroom. However,

some of these aspects of transmediation were not necessarily recognized by teachers, suggesting that many of these transmediative practices were forms of "hidden literacies" (Rowsell & Kendrick, 2013).

Research Methodology

This single-case study was completed as part of a dissertation study by the first author. The larger study explored the teacher's and the student's literacy practices in the classroom. The case is the student and the teacher during literacy activities.

Research Site and Participants

The study took place in one of the largest school districts in BC. The first author collected data in an elementary school that enrolled 300-350 K-7 students. Prior to the start of the study, the school added new classrooms to accommodate the growing number of students in the catchment area. The school had a diverse population of students and families from many different cultural backgrounds, home languages, and socioeconomic statuses. The majority of the family population of the school were considered to be mostly mid-to-lower working class. However, despite the population influx, many local families were moving out of the neighborhood because of the impending transit construction that led to rising rent.

Cate, an experienced teacher, participated in this case study because she wanted to learn more about how multimodal pedagogy could address the needs of students with LD, especially as the school district recently invested in more technology—devices, software, and computer applications (apps). Although the topic of identity was not a focus in the study's data collection and analysis, Cate generously shared that she self-identified as a first-generation European settler in Canada (personal communication, December 11, 2022). During the study, she taught a class of 27 students with diverse backgrounds, including refugee students new to Canada, English language learners, and students who needed academic, emotional, and behavioral accommodations. Despite the unique and complex needs of the students, Cate had little support in the classroom and often split her time between whole-class, small group, and individual instruction as few teaching aides were available to help her.

Theo Darcy, the focal student, was a fourth grade boy who self-identified as Indigenous according to Cate (personal communication, December 11, 2022). However, Cate was unclear which community he belonged to because this was not shared by Theo or his mother. It is also important to note that Theo's cultural background was not discussed with his mother as it was considered to be outside the purview of the study. The authors of this article chose to honor Theo's self-identification even though it is recognized that some context is missing to fully capture his identity. In class, Theo was friendly and eager to forge connections with his peers and his teachers. Theo had attended the school since second grade; however, he never received the appropriate instructional support because the paperwork for his LD designation was missing a signature from school district personnel. As a result, Cate was responsible for the majority of Theo's instruction. In his file, it was noted that Theo experienced difficulties with both reading and writing, especially with

comprehension and retention of information. With Cate's guidance, Theo was working on improving his print-based literacy skills during course of the study. He was a strong decoder and often enjoyed working with technology, especially the MacBook and the iPad. He was also a quick learner and was able to use a variety of applications and programs successfully. Although Theo's mother worked long hours throughout the day, she was mindful of Theo's technology use at home and tried to place limits around the time he spent on the devices.

Data Collection

Data collection occurred from March 2018 to June 2018 with both Cate and Theo. School visits in their classroom were conducted 3-5 days a week for 3-6 hours each visit. Data collection methods were participant observations and field notes, semi-structured interviews, and photo documentation of them during literacy activities.

Participant Observations and Field Notes. Cate and Theo were observed during whole-class, small group, and individual instruction, which offered insight into the teacher-student interactions that occur during literacy activities. The PI, an experienced teacher of students with LD, became an "active member" of the classroom (Flick, 2014, p. 296). Observations were written as field notes in a journal to track activities during literacy instruction, the participants' interactions, and informal conversations (Merriam, 1998).

Semi-Structured Interviews. Semi-structured interviews with Cate and Theo were conducted monthly to gather perspectives of the observed multimodal instruction and activities. Open-ended interview questions allowed for Cate and Theo's perspectives about literacy to emerge (Flick, 2014). It was especially vital that Theo's voice was included because students with LD are traditionally marginalized, and their literacy experiences need to be examined to extend beyond "able" and "disabled" literacy practices (Brodeur, 2020; Kliewer et al., 2006). Initial interview questions were developed to establish rapport with Cate and Theo and to gather narratives about their literacy experiences as a teacher and as a student. Initial interview questions informed the development of future questions to collect information about multimodal activities and responses to the instruction. Post-study interview questions allowed for reflections by the participants and clarified some of their perspectives. The interviews were recorded using the Voice Memo application on an iPod Touch and transcribed using Microsoft Word. Cate's interviews ranged from 30-60 minutes while Theo's interviews were about 15 minutes as mandated by the school district's research protocol. In order to incorporate more of Theo's perspectives in this study, informal conversations during the observations were included in the data.

Photo Documentation. Photo documentation (Rose, 2016) of Cate and Theo during literacy activities was a critical component of the data. A shooting script (Suchar, 1997) guided the photo documentation structured as literacy activities, participants, modes and materials, and setting.

Photos of Theo highlighted his sense of design and transitioning from mode to mode during the literacy activities. Nearly 1400 photos of Cate and Theo were collected.

Data Analysis

The three different sets of data were analyzed in multiple stages: a) field notes and interview transcripts were coded and categorized using inductive analysis to allow for findings to emerge from the raw written data (Thomas, 2006); b) qualitative content analysis of the photos using a social semiotics framework to guide the coding and categorization of the visual data (Barthes, 1977; Mayring, 2000, Kress & van Leeuwen, 1996; Ledin & Machin, 2018; Rose, 2016); and c) comparison across codes and categories from the field notes, interviews, and photos began to identify the main themes. The codes, categories, and themes were also in flux as findings were refined as data collection continued and member checks with participants carried out. Data analyses shifted to deductive methods in the final stages of analysis to begin connecting findings to the extant literature (Fereday & Muir-Cochrane, 2006). The final stages of analysis and triangulation were conducted using a process of abductive analysis, which allowed for a "back-and-forth movement between data, theory, and the purpose and focus of the research" (Freeman & Mathison, 2009, p. 154) in order to develop "new theoretical propositions to account for material that the old propositions didn't map onto" (Agar, 1996, p. 35).

Limitations of the Study

Limitations include lack of generalizability, shortened time for data collection due to delays in entering the classroom, and Theo's absence for 2-3 weeks due to illness resulting in more data from Cate's perspective. Despite the limitations, the findings indicate that Cate's teaching experiences and Theo's literacy practices are not atypical from the extant literature about students with disabilities and multimodal pedagogy (e.g., Collins, 2011; Fernández-López et al., 2013; Francom, 2020; McGhie-Richmond & de Bruin, 2015; O'Mara et al., 2017). Moreover, this study did not go into detail about the intersectional identities of the teacher and the student to provide a more in-depth exploration of how their lived experiences impacted their teaching and learning.

Findings

Major findings were a) competing perspectives of Theo's competencies, especially during literacy activities with technology; b) the uncertain relationship between print-based and technology-based classroom activities; and c) Cate's difficulties with assessing Theo's transmediative practices. Despite Theo's strengths with technology, his transmediative practices were often met with mixed responses by his peers or he was seen as distracted by Cate. Consequently, Cate often redirected Theo to print-based work because of her perception that he was distracted rather than making progress in his projects. Print was also more prominent in Cate's instruction of Theo because she encountered challenges to assessing non-print related work, such as music, 3D structures, and digital texts.

Competing Perspectives of Theo's Competencies by the Classroom Community

Throughout the study, Cate reiterated the importance of multimodal literacy activities in her interviews during the study and to the students in class because she wanted to create a community of learners that respected each other's transmediative practices. She explained that she saw transmediation as a form of inclusivity because of the diverse student population in her class (i.e., refugee students, English language learners, students with disabilities, and a range of socioeconomic backgrounds and family structures). She recognized that the students' work with multimodality often spoke to their social experiences with their friends, families, and communities. She also wanted to make sure that Theo had other modes he could use to communicate his learning while he was working on strengthening his writing and oral language.

When Theo was given the opportunity to work independently or as a pair with technology and multimodal texts, Theo was highly engaged with the curricular materials and was able to demonstrate his strengths more openly. Theo was very interested in technology and enjoyed experimenting on them to learn more about how computers and applications worked. Consequently, he was very skilled at using a variety of applications in the classroom and thoroughly enjoy creating multimodal texts, especially music and illustrations. Throughout the study, Theo spoke openly about why he liked working on content creation applications like GarageBand, Toontastic, PuppetPals, and Bloxels. In sum, he liked working with visuals and music because they let him be creative and use his imagination, which resulted in him making "a lot of cool stuff" (Interview, May 24, 2018). He also enjoyed the challenge of learning new functions and design options in the applications even if some of them were "super hard to try." During his independent work with technology, it was clear that Theo was very focused on his work even though Cate was concerned that he would lose his concentration if something on the device distracted him. She felt that Theo was too "churned up" by technology and she really needed to help direct his attention to the work that needed to be done (Interview, April 10, 2018). It was observed during the study that this was not often the case. When left with uninterrupted work time, Theo was able to sustain his attention and complete his work on a device as long as Cate was clear about what he needed to complete by the end of the work session.

Theo was also adept at viewing and comprehending digital multimodal texts such as videos on Youtube and the Discovery Education Techbook. At the beginning of the study, Cate used a variety of YouTube videos as a form of digital multimodal texts with the whole class during a unit about immigration. Theo was especially interested in the content about First Nations groups because he has Indigenous family roots and he wanted to learn more about the culture. During a short lesson about popular music made by Canadian Indigenous and First Nations bands, Theo was excited about listening to the music, moving along to the beats, and watching the visuals on screen. He paid particular attention to the details and was excited to watch the videos on his own. Theo was then inspired to create his own music on GarageBand in a project about bullying in hopes of sharing a similar message to the videos he watched. When Theo worked on the Discovery Education Techbook at the start of the simple machines unit, Theo paid great attention to the information presented in the videos. Cate pointed out that Theo demonstrated strengths as a visual learner and videos

did not rely on alphabetic print to help him build his understanding of the curricular content. Theo also recognized the benefits of viewing the videos on the Techbook during his interview on May 28, 2018, in which he pointed out that the videos helped him see how "things" (e.g., the human body, simple machines, etc.) worked or did not work. His expertise with a variety of applications also meant he was a strong resource for his peers. When paired with a classmate to work on the Techbook and review the texts (videos and short quizzes) on simple machines, Theo took the lead to navigate the texts and mark up pertinent information. During these periods of one-to-one engagement with technology, Theo was more upbeat and motivated in his work, displaying confidence and ownership over his multimodal texts.

However, when Theo was put in a larger group of three or more classmates, his multimodal work was often met with mixed (sometimes negative) responses by his peers. Cate felt that Theo's peers were often concerned that his social and academic differences would hamper their collective efforts in group work thus resulting in Theo's efforts and suggestions being often overlooked or ignored. For example, he was working with two female students, Arden and Liv, on Bloxels when I first met Theo, which Cate utilized as an interactive storytelling activity. Theo and Arden often disagreed over whose turn it was to use the iPad. Theo explained that while he enjoyed working on Bloxels, he did not like to work with Arden because "she usually does everything and doesn't let us do anything" (Interview, April 10, 2018). When Theo got his turn on the iPad, Arden often directed him what details needed to be changed in their story and Theo was not necessarily allowed enough time to come up with his own suggestions. Consequently, most of the story was crafted by Arden.

When Theo switched groups to work with two boys, Victor and Gary, a similar dynamic took place. The visual details in Bloxels helped Theo identify information that was missing in their story and he was able to keep track of how the story was unfolding. Cate agreed that this was a particular strength of Theo's and she recalled his ability to reorganize a story for improved clarity based on the visual details alone. When Theo noticed that a portal in their story was not purple but orange because another group had accidentally changed the color scheme, he quickly pointed it out to Victor and Gary, who were focused on the conclusion of the story. Initially, the other two boys were hesitant to review the portal and proceeded to continue their work. However, when the group looked at that particular scene with the portal together, Victor and Gary were surprised to find that Theo was correct, and they agreed to change the portal back to the original color.

Despite Theo's strengths with visual design, he continued to encounter resistance to his contributions in group learning activities. For example, Victor often took the iPad out of Theo's hands to work on the story without Theo's input. Theo was positioned as viewer rather than active creator. This was especially evident in the photo documentation as there was a pattern of Theo standing to the side of his peers and away from the iPad. Theo's peers without LD tended to be a stronger voice in the group projects and Theo's contributions were not necessarily regarded as highly as his peers' suggestions.

The Disagreement Between Print and Technology

Although Cate felt that Theo's learning was much stronger with technology than with print-based activities, his competencies with technology were also viewed as an impediment to his learning by Cate. As she explained:

> He got so churned up about having the device that I had to get him off the device and do the tactile building part [on the grid with the blocks]. He was just going too high speed, and he wasn't able to settle into what the focus was or what the job was or what he wanted to accomplish. (Field notes, April 10, 2018).

Cate often redirected Theo's attention from technology to other activities, many of which involved print-based work. For example, Cate asked students to plan their projects on paper first as a way to help them think through what materials they needed, the message they wanted to convey, and the design elements they would use. However, some of Theo's projects and interests were not easily mapped out on paper. When he wanted to create a song without lyrics on GarageBand, it was difficult for him to create a plan on paper because music was not easily translated into print. This activity ended up magnifying some of the writing skills that needed further development rather than acknowledge that Theo was able to create a cohesive song on GarageBand with little issue.

When Theo used Toontastic to create a story about immigration, he designed each scene of the story quickly and was focused on adding details to the settings and characters as well as recording his voice narration. His technology competencies were strongly evident as he was able to maneuver all the menus and options in the application with little difficulty. However, Cate was concerned that Theo was not following her instructions, particularly that his story did not contain all the criteria (stated in a check list on the blackboard) and that his story's details did not connect with information about immigration that she had taught. She asked him to stop what he was working on to reconsider his next steps.

> He [had] to go back and write his ideas down on paper. Cate [told] him, "You're nodding, but I'm asking you to share what's the push (in immigration patterns) because people don't leave [a home] if things are good." Theo respond[ed] that maybe his character [was] homeless and [didn't] have any money. She sat down with Theo to work on the revision of his story and erased some of his notes and rewrote the content information that she wanted Theo to focus on. Theo put his head down and watched as Cate talked him through his notes and plans for the story. He returned to Toontastic and began to remove completed scenes so he could better align his story with the notes from his conference with Cate. (Field notes, June 6, 2018).

A week later, Theo had deleted most of his story and was starting all over again but was unable to complete the story in time. Cate explained that Theo was always short on time, and it was frustrating to watch him restart his work. However, Theo's time was often taken up by writing activities that did not necessarily resonate with his interests and strengths, and there were conflicting expectations, as in this example, of how to write a nonfiction story for a social studies project.

Challenges in Evaluating Transmediation as Part of Literacy Learning

There were a range of issues that contributed to Cate's difficulties with assessing transmediation. First of all, she lacked guidance for assessment practices because the newly revised curriculum published instructional frameworks first. The assessment guidelines were still in development. Secondly, Cate was using FreshGrade, a digital portfolio system that allowed for multiple sources of learning to be uploaded (e.g., photos, written work, videos, etc.). She felt that FreshGrade helped her capture the multimodal work and transmediative practices of the students. However, it took a significant amount of time and effort to get all the students' work uploaded onto FreshGrade and Theo found it difficult to complete certain tasks within the allotted time despite his familiarity with the FreshGrade interface. One of the more significant challenges, however, was interpreting transmediation to determine literacy learning.

This challenge was briefly discussed in the previous section, in which Cate wanted Theo to re-interpret his GarageBand music by writing about it. However, in larger projects with multiple steps and phases, this issue with interpretation became more glaring. One of Cate's inquiry units was the construction of simple machines. This unit required a month's long process of research, planning, designing, drafting, and building a prototype. Theo immediately gravitated to this project because of his strong interest in building models. He experienced delays during the initial phases of the project because he did not follow Cate's instructions of research and drafting the machine on paper. Instead, he drew the prototype without finishing the simple machines videos first and he was asked to revisit Cate's instructions. Consequently, he was one of the few students who did not start the project with the rest of his peers. With Cate's approval, Theo was able to proceed with creating his machine, a pulley, out of boxes and jars. Throughout the machine's construction, he underwent an iterative back-and-forth process to self-monitor his progress. From the observations, it was noted that Theo referred to his hand drawn plans and focused on how to align the construction with his drawing. As shown in the figures below, the plan and the structure looked similar in the side-by-side comparison.

Figure 1. Theo's hand drawn plans and the model of his simple machine (a pulley).

From Theo's perspective, he believed he built the model according to his drawing. However, when Cate was asked about his model, she said that "structurally, it didn't match his prototype (the hand drawn plans) and then it didn't translate in the construction" (Interview, June 27, 2018). Despite her initial perspective that the drawing and the model did not match, she concluded that Theo's model functioned like a pulley from the photos and videos he uploaded onto FreshGrade. Despite Theo's frustration with some of the academic work, she observed that "he was able to build some strategies and push through [his frustration] and be able to say, 'Okay, I know the function [of the machine], I know the components, I can see the work this machine does' and that's a big deal" (Interview, August 15, 2018). Although Cate concluded that Theo's model ultimately met her requirements, it was clear that there was a mismatch in expectations of the model between Cate and Theo during transmediative practices. The lack of assessment models at the time hampered much of Cate's ability to evaluate Theo's work meaningfully. Instead, Cate tried

to compare two different forms of transmediative practices to draw conclusions about Theo's learning but as Mills (2011) noted, modes cannot be easily translated from one form to another. Instead, it is important to not only pay attention to the students' chosen modes but their intentions and purposes for the modes in their meaning-making (Cope & Kalantzis, 2021). The reconfiguration of the modes during literacy activities, which help students better understand the curricular content being taught, can be difficult to capture with traditional assessments.

Discussion

Findings from this study raised issues about a) social contexts of transmediation and establishing student positionality; b) assessment of transmediative practices of students with LD; and c) relationships between traditional and transmediative literacy practices of students with LD.

Social Contexts of Transmediation and Establishing Student Positionality

Students with LD may share the same designation but experience literacy challenges differently and it is important to avoid overgeneralizing the students' literacy practices. Existing literature about multimodality tended to focus on students without disabilities and one purpose of this article was to reframe the literacy experiences of LD as equally valid and diverse. However, in this study, social contexts influenced the evidence and use of the diverse literacies of the focal student with LD.

Cate's goal of implementing multimodal pedagogy and encouraging transmediative practices was to build a classroom community of learners who respected each other's knowledge and experiences with representing meaning in multiple ways. Although Cate hoped that multimodal activities would encourage participation and collaboration, Theo's developing competencies with print-based practices impacted his work with his peers. Subsequently, his contributions to group projects were minimalized or ignored. The groups were generally self-managed as Cate rotated around the classroom to work with each group and as such, Theo and his peers were tasked with developing a working relationship while also completing learning objectives set by Cate. One of the benefits of the small group work was that Theo was able to develop some ownership, especially if he was in a group that he was comfortable in. Jocius (2018) noted that collaborative activities around multimodal compositions can facilitate opportunities for students to transition between experts and novices with digital devices. Students are also developing other complex skills while working together on multimodal compositions, such as negotiating meanings with a variety of modes, developing new ideas, delegating tasks, and balancing power dynamics (Jocius, 2018; Smith, 2019). With this in mind, Theo was at times the expert in his group in terms of using the applications for creating the stories, but his developing skillsets with academic and print-based literacy often meant he was sidelined as the novice despite having ideas to share with his group. Subsequently, although multimodal pedagogy was implemented with the goal of building an inclusive classroom in mind, Theo was not necessarily participating fully when working with his peers thus challenging the notion of multimodal pedagogy as a form of inclusive education (Florian, 2014).

Findings indicated that despite Theo's evident strengths in transmediative literacy practices, these competencies were not necessarily positively regarded by Cate. When Cate corrected Theo's work, he often remarked that he did something "wrong" in his work and he would begin the arduous process of restarting and revising his work, which resulted in him missing due dates. However, there were times when Theo clearly showed he was an expert in his learning, especially with technologies as he was able to maneuver a number of devices and applications swiftly and deftly. Yet, there were fewer instances of regarding Theo as a "primary knower" who was able to freely share his ideas "without having to conform to the interpretations of others" (Hall et al., 2013, p. 231). When Theo was left on his own, he showed some agency and creativity in his work, which resulted in him feeling more confident in his learning. Theo's projects with and without technological tools showed his careful attention to using a variety of modes effectively. He was especially detailed when creating his model of a pulley when he referred back and forth from the videos and text readings to his hand drawn plans and from his hand drawn plans to his construction of the model. Each phase of this project required Theo to process, synthesize, and communicate information from one mode to another (Kalantzis & Cope, 2016; Ormerod & Ivanič, 2002). In recent literature about multimodality and multiliteracies, Cope and Kalantzis (2021) continue to note that students need to be positioned as "knowledge producers" (Section 2.2, para. 6) as they remix the modes to help them understand and analyze curricular content, which is often difficult to capture with traditional teaching and assessment methods. Consequently, teachers require a more sophisticated set of knowledge and tools to capture the students' engagement with literacy materials, especially the digital.

This struggle between "tried and true" methods and creativity became a consistent pattern between Cate and Theo. Because Theo was often seen as off task and lacking personal responsibility in his individual learning by Cate and in his work with his peers, his transmediative practices were often interrupted for other tasks and he lost some ownership over his work. Transmediation generates new meanings and these new representations of meaning are only partial approximations (Mills, 2011). However, teachers' assessments of students' understanding tend to rely on identifying a direct correspondence between modes (e.g., translating a drawing to a 3-D model as presented in this article), otherwise known as *transduction* (Leonard et al., 2016). This misunderstanding of transmediation can result in seeing it as the student's failure to "correctly read (or reproduce) the stable messages encoded in teacher's [sic] communications" (Jewitt et al., 2000, p. 270). Instead, Siegel (1995) suggested that transmediation is more easily understood as the creation of metaphors. That is, signs that are remade or redesigned by students rely on individual interpretations, grounded in sociocultural values, and informed by life experiences. In seeing Theo as a primary knower of his literacy practices, it was important to consider how he understood his creative endeavors rather than force his work to align with specific guidelines. This is consistent with Heydon and Bainbridge's (2015) concepts of asset-oriented pedagogies and the much needed shift away from pathologizing students who engage with literacies that are considered to be outside the expectations of the curriculum by teachers.

The Limited Assessment Options to Evaluate Transmediation

This article highlighted the instances where Cate encountered difficulties with and barriers to evaluating Theo's transmediative practices. First and foremost, Cate had very limited access to assessment resources that catered to multimodal practices in the classroom. The phased dissemination of the newly revised curriculum meant that Cate had more guidelines for instruction rather than assessment. The assessment guidelines that were eventually released in 2017 (and still used today) provided few resources for evaluating transmediation. Much of the criteria continued to be centered on print-based literacies (e.g., the fourth grade guidelines list experimenting with words, expanding word knowledge, identifying the beginning, middle, and end of a text, and developing effective oral communication skills) (BC Ministry of Education, 2017b). Although there was a specific call to adopt technology and digital texts (BC Ministry of Education, 2016a), the assessment strategies did not align with multimodal literacy instruction and transmediative practices. Instead, there seemed to be an attempt to map print-based competencies with non-print modalities rather than expanding literacy assessment to address a variety of modes. Even though there are examples of assessments that focus on multimodal literacy practices in recent literature (e.g., Tan et al, 2020), the lack of assessment models available to Cate at the time of the study became a challenge as she could not reframe Theo's transmediative practices to position him as the primary knower or knowledge producer of his meaning-making.

Part of the challenge with assessment was also differing interpretations of Theo's transmediative practices, especially without print. For example, during the simple machines project, Cate questioned whether Theo's hand drawn plan matched the model that he built even though Theo felt strongly he followed his plans accordingly. Furthermore, there was little discussion about Theo's understanding of how each mode contributed to his construction of the model even though design was part of the assessment criteria. Omerod and Ivanič (2002) noted that students are motivated to create based on their access to materials and the information they want to communicate, especially if there was something interesting and relevant to them. Theo may not have always talked about why he chose certain materials and modes, but he was selective about what he wanted to use, which indicated that he was paying attention to the details in this drawing. This careful consideration of the modes, however, remained invisible during the assessment process as Cate focused on the visible output of transmediation (the 3-D model itself) (Rowsell & Kendrick, 2013). Kress (2010) cautioned that all representations of meaning are only partially understood by teachers because children tend to draw from a variety of interests to represent how they understand the world. As such, there are no direct commonalities from one sign system to another (Mills, 2011).

This approximation of meaning in transmediation also left a grey area for Cate. During observations and interviews, Cate was open to multimodal representations of meaning and wanted students to engage with transmediation. However, she needed to rely on written or oral language as primary modes of assessment because she wanted to make

sure she was adhering to the school's guidelines for reporting learning (as outlined in the criteria from BC Ministry of Education, 2017b). Parents and administrators, for example, were looking for information that highlighted Theo's progress in reading and writing and less so on his multimodal work (BC Ministry of Education, 2016b). Most notably, in order to obtain Special Education services and support for Theo, she needed to submit data that he was experiencing specific challenges with print-based literacy skills. She expected Theo to write or narrate his work to explain his design intentions and communicative objectives even though some of his work was not easily translatable into a linguistic mode (e.g., writing about his song on GarageBand, which had no lyrics). However, the reliance on linguistic modes as part of literacy assessment limited the opportunities for Theo's own transmediative practices to emerge in ways that were authentic to his interests. This was evident when he was asked to revise his story on Toontastic and much of his original work was lost in an effort to align with Cate's criteria for the assignment. Cate also expected Theo to explain how his model of the pulley worked in a recorded narration. Because it was not always clear to Cate how Theo approached his work as he switched modes, it was often attributed to Theo experiencing difficulties with processing content information rather than recognizing that he had to somehow translate his work with tactile materials into forms of speech.

Kress (2010) noted that although students are doing complex work with various modes all the time, it is ultimately up to the teacher, who has more authority over the assignment, to make judgements about the students' work. Cate's focus on language was not surprising given that the provincial curriculum still prioritized competencies with print literacies over multimodality (BC Ministry of Education, 2019; Loerts & Heydon, 2017). Although there is more room in the current BC Language Arts curriculum for teachers to work with a variety of modes with students, the ultimate goal is to ensure that students are able to read, write, and view texts critically. As noted earlier, Cate was also caught between two different frameworks for literacy instruction—one for the general population of students where multimodality was a focus and the other one for students with disabilities where print and oral language were prioritized.

Relationship Between Traditional and Transmediative Literacy Practices

Throughout the study, Cate was determined to design instruction with multimodality in mind; however, she needed to balance teaching print-based skills inherent in traditional academic literacy with more flexible and creative approaches. BC's current language arts curriculum has a stronger focus on multimodality as part of literacy instruction. However, Cate's difficulties with evaluating multimodal literacies and transmediation meant that she needed to use print as the primary mode in her assessment practices even though she valued non-print modes. Cate also needed to assess Theo's reading and writing to meet the expectations of the school district. This meant that much of his non-print related work was relegated to the background in favor of completing the district's assessments. Findings from this study indicate that despite the expansion of literacy models to include various modes of meaning-making, schooled literacy is still grounded in print, which raised the question of how do print and multimodality fit together

in the English language arts curriculum for students with LD. Throughout the study, a recurring pattern emerged of Cate redirecting Theo to print-based work even though he made more progress in activities that involved hands-on tactile work or digital devices and digital multimodal texts. During the interviews, Cate was often concerned that Theo was distracted by technology and was not able to complete more "meaningful work," which was often categorized as print-based work according to the Ministry of Education's guidelines for students with LD. Moreover, despite the shift towards multimodality in the current curriculum for English language arts, linguistic forms of meaning-making are the top instructional skillsets.

In the context of this case study, multimodality was not meaning-making in the absence of linguistic modes. Linguistic modes, like print and speech, were seen as one of many modes used in conjunction with sound, visuals, gestures, touch, and many other modes. Kress (2010) suggested that language needs to be reevaluated in a "satellite view" (p. 15) to gain a bigger picture of how all the modes fit together. When language is not the best mode to express meaning, how have students utilized other modes to strengthen or clarify their thinking? Design using transmediation is also a higher order thinking skill that is not well explored in the provincial curriculum, but it is a skillset that is important in the "real world" as students engage with more nuanced and complex texts in their daily lives (Schneider et al., 2020). Transmediation is a constant process of adaptation and "involves generative thinking and problem solving as new connections are made between expression planes" (Mills, 2011.p. 64). This means that in order to better understand students' transmediative practices, the intentions for the modes, the design process for how the modes are juxtaposed and combined, as well as the final product of meaning all need to be acknowledged by the teacher. Multimodality can be applied to literacy instruction as a way to better understand the design of communication to break through the boundedness of speech and writing (McLean & Rowsell, 2015) as well as to create "occasions for deep reading, thinking, and writing" (Schneider et al., 2020, p. 3). As students navigate digital multimodal texts such as websites and textbooks (as observed in this study), print continues to convey the bulk of the information, but it also interacts with and enhances other visual and audio modes presented in these texts. Students with LD may not prefer to use print and speech, but they may excel using other modes to generate their own "satellite" view of meaning to better understand texts as well as create them. While traditional literacy practices can further marginalize students with LD, multimodal pedagogy can be enacted as a way to expand on opportunities for students to work with a variety of modes, which can help students feel their transmediative practices are valued as part of classroom literacy practices.

Conclusion

This study explored the transmediative practices of one student with LD, Theo, and the classroom factors that shaped his experiences with transmediation. These included his teacher's (Cate) and his peers' perspectives of those practices, his teacher's pedagogies, and the teacher's knowledge and use of appropriate assessment measures and methods. Although Cate purposefully integrated multimodality as a form of literacy instruction to

enhance inclusion, Theo's practices were unintentionally marginalized during the creative processes of various projects and during assessments of those projects. As such, inclusion did not always equate to inclusivity in this study, in which inclusivity is "premised on the idea that the process of teaching, learning, and sharing of knowledge is fundamentality a power relation. Thus, to deal with inclusiveness is to address the issues and inequities related to the distribution of power" (Dei et al, 2000, p. 243). With this in mind, two explanations can be given for how Theo and his multimodal practices were perceived by the classroom community. One, social capital plays a role in class power structures (Brodeur, 2020). In the context of this paper, social capital is understood as the "structure of relations" between the students, which includes the ability for the students to trust each other (which was brought up by Cate throughout the study), behaving within societal norms or expectations of the classroom community, and the building of social networks (or the lack of) within the classroom or the school (Coleman, 1988, p. S98; Dika & Singh, 2002). Theo was not seen as a strong student and his academic difficulties created schisms or inequalities between him and his peers. Consequently, his ideas were often seen as less important by his non-LD peers. Secondly, Cate was worried that Theo's transmediative practices did not necessarily align with the formal teaching and learning objectives. This led Cate to re-direct Theo to print-based work instead of allowing him more opportunities for his transmediative practices to emerge organically.

Assessment also proved to be a challenge in a classroom that aimed to prioritize multimodality. Cate felt unsure how to interpret Theo's work without print or oral language and/whereas Theo often chose to use non-print modes to express his learning. Thus, some of Theo's work was seen as "missing the mark" even though there is no one-to-one correlation from one mode to another. In fact, some of Theo's work was difficult to translate into print and yet print was still seen as the dominant mode of literacy instruction for students with LD despite the provincial curriculum's shift towards multimodal literacy for non-LD students. Findings from this research suggest that the voices and ideas of students with LD need to be heard and allowed to flourish as they are the "primary knowers" of their practices.

Although traditional literacy practices and multimodality (and consequently, transmediation) can be seen as conflicting models of literacy, it is important to remember that print and speech are one of many modes. Rather than seeing print and speech as divorced from other modes, a broader view of transmediation needs to be applied for students with LD. Only then will it be possible to evaluate how students with LD are designing texts where linguistic, visual, spatial, sound, gesture, and a number of other modes are combined in transmediation. The design of multimodal texts is a nuanced and complex process that is individual to each student. Although assessments may not yet be developed to evaluate multimodal literacies, it is important to explore how students with LD are currently using a variety of modes to highlight their strengths and well as ameliorate some of their difficulties with traditional forms of literacy in academic contexts.

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