Makerspaces for Newcomers' Language and Literacy Learning

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Abstract: In this paper, I present ways that makerspaces could support children's language and literacy learning and engage young participants in this digital age. In addition, I argue that makerspaces could be a place for newcomer children to embrace their funds of knowledge (Moll et al., 1992) and use them as a foundation to language and literacy learning.

Keywords: Makerspace, Literacy Learning, Newcomer Children

Introduction

Amakerspace is an educational movement supporting opportunities for children to collaboratively create and design artifacts (Wohlwend et al., 2017). One of the differences between the contemporary maker movement and traditional craftsmanship is that today's maker movement has digital materials and tools as well as technologies involved in the making process (Halverson & Sheridan, 2014). A literacy makerspace could be conceived as "an area set aside for children of all ages to tinker, create, and play while building skills from the multiple literacies: reading, science, math, art, technology, and so on" (Pawloski & Wall, 2016, p. 91). Within a makerspace context, maker literacies could include: "communication and creative innovation using a range of semiotic forms; the production and analysis of multimodal and multimedia/transmedia texts; the ability to engage in critical reflection and problem-solving, and the ability to network" (Marsh et al., 2018, p. 50). At present, however, we know little about the development of these literacies for newcomer children, which includes children who have recently arrived and attended schools in Canada.

In this paper, I start by providing understandings of the concept of literacy and information on newcomer children's literacy competency. Next, I present ways that makerspaces could support children's language and literacy learning and engage young participants in the digital age. Also, I argue that makerspaces could be a place for newcomer children to embrace their "funds of knowledge" (Moll et al., 1992) and help them in their language and literacy learning.

Research Purpose and Questions

In my doctoral research, I plan to explore how makerspaces can be a place for newcomer children to practice and learn multi-literacies. Drawing on complexity thinking (Davis & Sumara, 2010; Doll, 1993) and Green's (1988, 2012) three-dimensional (3D) literacy model, my study will explore the meaning-making practices of primary grade newcomer children in the makerspace context. Through observations and interviews, I will explore newcomer children's lab-based activities in making artifacts with both digital and non-digital materials. The questions that will guide my study are: 1) What maker literacy practices are newcomer children engaging in through makerspace experiences? 2) What is their literacy learning during the making process? And 3) What are the children's perspectives on their digital literacy practices in Canada?

Significance

My doctoral research will support practical advances in assisting newcomer children to become confident and competent literacy learners in their everyday lives. This research aims to inform educators of how newcomer children make meaning through makerspace involvement in literacy learning. Regarding the academic field, my study will inform future research on literacy and newcomer children and assist in developing new ideas for literacy teaching and learning. My research will also provide insights for educational technology companies in terms of designing and assessing materials and supplies for makerspaces.

Situating Literacies in Contemporary Context

Understandings of literacy have shifted dramatically over the last several decades (Leu et al., 2019). Research shows that children's communication practices are complex, often involving multiple modes, and are shifting in the digital age (e.g., Gillen et al., 2018; O'Mara & Laidlaw, 2011). Literacy is conceptualized not only as competency in using language systems and literacy tools, but also making meaning in and for specific sociocultural contexts (Gee 1989; Street, 2014). With the emergence of digital technologies in children's lives, being literate requires gaining competence with additional forms of literacy, such as multimodal (Jewitt & Kress, 2003) and digital (Plowman et al., 2008). Regarding young children's digital literacy practices in the school context, studies have been conducted with children in Canada (Laidlaw et al., 2015), the UK (Flewitt et al., 2017), the US (Wohlwend, 2015), and Australia (Apperley & Beavis, 2011). Additionally, there are examples within Canada of English Language Arts curricula that recognize the importance of multimodal and digital literacies (e.g., Alberta Ministry of Education, 2015). However, viewing and representing are often neglected in many language arts classrooms (Pahl & Rowsell, 2012). Newcomer children are sometimes considered as underachieving in school literacy, because of their lower academic English language proficiency levels in speaking, listening, reading, and writing (Cummins, 2006; Roessingh & Elgie, 2009). While newcomer children bring considerable "funds of knowledge" (Moll et al., 1992) to their new countries, their teachers may not acknowledge such strengths (Merchant & Devender-Kraft, 2019). Drawing on broader understandings of literacy, newcomers' multimodal and digital literacy skills learned from their home contexts are often overlooked by teachers (Cummins, 2006; Martinez-Roldán & Newcomer, 2011).

Makerspace and Maker Literacies

Existing research has investigated a variety of approaches and practices within digital literacy teaching, including video games (Beavis, 2014; Gee, 2007), digital applications (Wohlwend, 2015), and family digital literacy environments (Marsh et al., 2017a). With the emergence of the Maker Movement (Halverson & Sheridan, 2014) and contemporary maker culture (Schrock, 2014), making has become a new pedagogy for digital literacy and other multi-literacies learning and practices (Bruck & Crocker, 2020; Marsh et al., 2017b; Marsh et al., 2020).

Makerspaces offers new opportunities for children to express their ideas creatively and engage in "making" meanings with both digital and physical materials (Pepplar et al., 2016). Practice in makerspaces also fosters critical thinking, problem-solving, and communicative skills (Marsh et al., 2018). Literacy scholars have different understandings and perspectives of maker literacies, based on their diverse interests and focuses. In my study, I adopt Wohlwend et al.'s (2018) definition, where maker literacies are viewed as competencies involving "making and remaking artifacts and texts through playful tinkering with materials and technologies" (p. 148).

Many literacy researchers around the world have explored makerspaces from various perspectives, including participants' literacy practices, children and parent engagement, and assessment of learning. Looking at research in children's literacy practices in makerspace, Marsh et al. (2019) explored makerspaces for children's literacy learning from three levels: individual, relational, and institutional. Marsh et al. (2019) found that makerspace could be a place to foster children's agency, where children are allowed to explore their interests through making. Specifically, children, as active participants in meaning-making, are encouraged to develop their knowledge and skills through exploration in makerspaces based on their personal interests. In addition, children's funds of knowledge (Moll et al., 1992) are brought to the makerspace when they engage in maker activities. These funds of knowledge, including digital literacy and other multi-literacies, might have been developed in out-of-school contexts. For example, children may know how to work with different digital tools or technologies. Moreover, not all children have the same level of knowledge that is acquired from the home context. Makerspaces provide opportunities for children to share their funds of knowledge and learn from one another.

Fostering creativity is a central element in today's literacy learning (Walsh, 2007) as well as a key learning point in makerspaces (Schrock, 2014; Wolhwend & Pepper, 2015). As such, Marsh et al. (2018) argued that creativity is a key concept in maker literacies. From a social level, maker activities promote a collaborative and positive atmosphere for children to work together to make meaning (Burke & Crocker, 2020) creatively. For example, Escott et al.'s (2020) study found that students are allowed to creatively and collaboratively explore and query the value and norms of punctuation usage in literacy makerspaces.

From prior knowledge on children's literacy learning and practices in makerspace, making is a transformative pedagogy that allows children to acquire skills and practices to make meaning in contemporary society. More importantly, maker activities acknowledge children's funds of knowledge and allow children to learn from each other.

Maker Pedagogy for Newcomer Children

As mentioned earlier, many newcomer children who are English language learners might be considered underachieving in school literacy based on their English language and literacy competency. However, makerspace as a pedagogy could be a place where these children's prior knowledge and skills are acknowledged, as they can make meaning based on their interests. My research investigates the potential of literacy makerspace environments to provide opportunities for newcomer children and explores the use of existing literacy competencies through the experiences of designing and creating literacy artifacts.

In Canada, many teachers find it challenging to come up with ways to engage new language learners in the classroom. Makerspace pedagogy could offer one way to increase engagement among newcomer children in classroom activities. Through these activities, newcomer children can build confidence in their literacy competency and their interactions with peers.

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