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Using PulpMotion Videos as Instructional Anchors for Pre-service Teachers Learning about Early Childhood Special Education

Denise N.J. Chapman
Monash University, Melbourne, Australia

Abstract

Providing pre-service early childhood general educators with a strong knowledge base of key aspects of early childhood special education is essential in the United States as US federal law mandates it. Specifically, the Individuals with Disabilities Education Act (IDEA) stipulates that children with special needs must to be placed in the least restrictive environment, and thus this legislation increases the number of young children with special needs in general education settings (Cook, Klein, Tessier, 2008; Crockett & Kauffman, 2013; Siegel, 2007). For many pre-service early childhood educators, learning about concepts in early childhood special education can be challenging given that pre-service general educators can often feel uncomfortable with potentially working with children with special needs, a population that they may feel they have little understanding of how to effectively teach (Henning & Mitchell, 2002). However, teacher education approaches that allow the exploration of various perspectives about inclusive practices while also developing critically reflective thinking skills can promote a sound understanding of inclusive teaching practices (Silverman, 2007). This study introduced an anchored instructional experience using a software program called PulpMotion to create video media to bridge meaningful understandings of general educators with potentially challenging knowledge of early childhood special education. Pre-service early childhood educators presented with the PulpMotion created anchored instructional video experiences were shown to have a marked increase of on-line discussion board postings and reviews of "non-required" reading of early childhood special education.

Key words: teacher education, digital technology, special education

Introduction

Providing pre-service early childhood general educators with a strong knowledge base of key aspects of early childhood special education is viewed as important due to a federal law, the Individuals with Disabilities Education Act (IDEA), stipulating that children with special needs must to be placed in the least restrictive environment, which increases the number of young children with special needs in general education classroom settings (Cook, Klein, Tessier, 2008; Crockett & Kauffman, 2013; Siegel, 2007). For many pre-service early childhood teachers, learning about concepts in early childhood special education can be challenging given that pre-service general education teachers often feel uncomfortable with potentially having to work with children with disabilities, a population that they may have little interest in or understanding of how to effectively teach (Henning & Mitchell, 2002). Providing these general education teacher candidates with effective instructional opportunities is essential for successful educational outcomes for young children with or without special needs within the early childhood setting (Odom, 2002; Tsao, Odom, Buysse, Skinner, West, & Vitztum-Komanecki, 2008).

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Whether pre-service early childhood general educators are taught knowledge of early childhood special education in a manner that is explicit or implicit, they must still retain the new knowledge for their future teaching experiences. To successfully retain new knowledge, many pre-service early childhood educators are obliged to develop their own strategies for connecting said knowledge to the information they already have, since a person's thinking relies firstly on their memory (Vygotsky, 1978). Making this connection can be challenging as described below:

> [A] monumental problem to be overcome is how to assist learners in connecting packets of information—information that they perceive to be unconnected. …Some [students] may appear to have poor comprehension and memory skills not because they have some inherent memory 'deficits,' but because they lack or fail to activate, the background knowledge that was presupposed by a message or text. (McVee, Dunsmore & Gavelek, 2005, pp. 553-554)

Research has shown that educators, such as university instructors, who activate students' meaningful, background knowledge while teaching them within a given learning environment, particularly when teaching unusable or disconnected facts (inert knowledge) to students, have been shown to enhance the learning process (Bransford, Brown, & Cocking, 2000). Using the knowledge and understandings that students bring to the learning context as a starting point allows students to actively construct knowledge, particularly inert knowledge, in ways that are meaningful and assist students to learn key knowledge with a deep, organized understanding that makes the retrieval and application of the knowledge easier (McVee et al, 2005). Moreover, in order for students to develop these higher levels of knowledge and mental functioning, there must be social interaction, since "higher functions originate as actual relations between human individuals" (Vygotsky, 1978, p. 57).

Using meaningful knowledge as a starting point within an active, social context can serve as a platform for successful learning (Bransford et al., 2000; McVee et al., 2005; Vygotsky, 1978). Very often pre-service early childhood general educators can find themselves struggling to find significance in learning about young children with special needs as well as holding uncomfortable feelings towards their efficacy in teaching children with special needs (Henning & Mitchell, 2002). White (1990) noted that by capitalizing on the strategy of using *what the student knows* as an instructional starting point, teachers can propel a struggling student from the *back* of the class up to the *front*—ready to engage in learning.

However, some theorists suggest that to "know" is an action first before it becomes knowledge as a noun (Scardamalia & Bereiter, 2006; Gee, 2008; Lave & Wenger, 1991). Knowledge must be acted out. It should involve various ways of interaction within a set of happenings. Knowledge is situated within experience; ways of viewing, being, and valuing what is around us. Gee (2008) suggests that this viewpoint, post-progressive pedagogies, necessitates the students to be immersed in an activity that provides systematic guidance. Much like Gee, this study proposes that digital technologies can assist in situating learning, that is gaining understanding within the context of activity. In this case, pre-service educators can acquire knowledge about inclusion when enveloped within meaningful contexts that mimic game-like engagement. This study purposes that

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instructional anchors may help to bridge meaningful understandings that general educators hold with seemingly inert knowledge of special education and young children with special needs.

Anchored Instruction

Learning strategies that situate or anchor instruction within meaningful situations (what the student knows) is a topic area examined in the field of cognitive science (Bransford et al., 2000; Crews, Biswas, Goldman, & Bransford, 1997; Love, 2004; Rieth, Bryant, Kinzer, Colburn, Hur, Hartman, & Choi, 2003). The Cognition and Technology Group at Vanderbilt (CTGV) (1990) under the direction of John Bransford were the first to develop the concept of anchored instruction, which involves learning strategies that anchor or locate key knowledge within a meaningful problem-solving social context (Crews et al., 1997). McLarty, Goodman, Risko, Kinzer, Vye, Rowe, and Carson (1990) extended this definition and included that anchored instruction is "a rich shared environment that generates interest and enables students to identify and define problems while they explore the content from many different perspectives" (p. 2). Anchored instruction involves "instruction in which the material to be learned is presented in the context of an authentic event that serves to anchor or situates the material and, further, allows it to be examined from multiple perspectives" (Barab, Hay, & Duffy, 2000, p. 5). The primary goal of anchored instruction is to stamp-out the problem of inert knowledge, knowledge that when asked, can be recalled by students but is not readily used in higher-level thinking. Since one of the main goals of education is for students to *apply* knowledge that is presented in school to problems or issues they may encounter in and out of the school academic setting, anchored instruction's shares a common goal of the classroom teacher (CTGV, 1990; Kariuki & Duran, 2004).

To combat the inert knowledge problem, anchored instruction allows for students to actively engage together in authentic learning activities in which students tackle problems structured like those confronting expert practitioners in the real world (CTGV, 1990) and as students are engaged in these story or problem situations they learn important strategies that enhance "their abilities to recognized meaningful patterns of information … [and organize key knowledge] around core concepts or big ideas that guide their thinking" (Bransford et al., 2000, p. 36). This form of context-based learning allows for students to learn key skills while they, and their teachers, are engaged in higher-level thinking activities. For instance, the Jasper Woodbury Problem Solving Series are interactive videodisc programs developed by CTGV that allow for students to learn specific math problem solving concepts by engaging in realistic stories (i.e. problems) presented to them on video (CTGV, 1990). Students learn key concepts much like an apprentice would in the real world. The stories from the interactive videodisc allow children to build upon their existing knowledge to achieve an understanding that is more mature and their classroom discussions help the classroom teacher have a better understanding of the children's existing knowledge. This is important because learning theorists like Vygotsky (1978) note that children construct new ideas and knowledge based upon constructs they already know and understand. Bransford et al. (2000) also note, "if students' initial ideas and beliefs are ignored, the understandings that they develop can be very different from what the teacher intends" (p. 10). Thus, the use of anchored instruction is a powerful way of making instruction learner-centered and specifically based within a meaningful context and understanding of the learner. The learners play an empowering role in their own learning. This study borrows from the anchored instructional approach as a way to teach students (pre-service early childhood teachers) key knowledge in early childhood special education. The purpose of this study was to utilize a new technology to create an instructional anchor intended to increase pre-service early childhood general educators reading of and input on on-line discussion

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boards to discuss their understandings of fundamental knowledge in the field of early childhood special education.

Method

Participants and Setting

The participants were 26 early childhood general education majors from Spring semester and 26 early childhood general education majors from Fall semester of the same year. Their ages ranged from 23 to 36 years. Participants were enrolled in either their junior or senior year of undergraduate school with the intention of teaching in the field of early childhood education upon graduation. Each participant was a full-time teacher candidate at an upper-tier university in the southwest area of the United States. Participants were all enrolled in the same early childhood special education course, which was web-enhanced and required both face-to-face and on-line participation. This course was a require course and students' first and only early childhood special education. Teacher candidates enrolled in the Spring early childhood special education class did not have the anchored instructional opportunity, while the students from the Fall semester did have the anchored instructional opportunity. Teacher candidates' participation in the course's on-line "not required" readings and the on-line discussion postings were monitored for the fifteen weeks of both the Spring and the Fall semesters.

Measures

Participants were measured in two ways. First, weekly discussions on the web-discussion board were used to determine the amount of student-generated input on topics relating to early childhood special education. Specifically, the number of web-discussion entries for teacher candidates in the class and the number of times teacher candidates logged on to the discussion board. Second, the number of times each participant logged onto a non-required reading area of the course's on-line shell.

PulpMotion Software

This case study used a software program called PulpMotion, a media software program created by Aquafadas, which is headquartered in the south of France (www.PulpMotion.com). PulpMotion is currently available for Macintosh computer users. PulpMotion permits its users to create and edit audio, pictures, and video media from iPhoto, iMovie, iTunes, and Garageband. The PulpMotion interface allows for easy drag and drop media production, specifically to create Quicktime based exports as well as exports for email, iPods, iDVD, and iWeb. There are approximately 30 themes that users can use to build innovative media projects. For this study, the "Silly News" theme was used to produce on-line video lectures (anchored instructions) that incorporated potentially inert knowledge of special education with hot-topics and humor from popular-culture that was generated initially by Pre-service early childhood generalists during face-to-face class meetings. The Silly News theme allowed for potentially inert knowledge on the topic of special education to be relayed to students via a "news anchor/host". PulpMotion has nine different news anchor/hosts, specifically a tomato, a blonde-haired woman, an African American man, a Caucasian man, a donkey, a teddy bear, a leek/onion and you—as yourself. Each news anchor/host, with the exception of yourself, is portrayed as a static picture with an opening for your facial movements to show. In the case of the tomato, the donkey, the teddy bear, and the leek/onion, only one's lips are displayed. The program mimics late-night talk show comedy sketches, in which still-photographs of politicians and famous Hollywood actors are made to look like the actual person having a conversation with the television audience (e.g. Connan O'Brian's talking picture segments). For

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instance, the tomato host was a still-photo of a cartoon-like tomato with amusing facial features. The mouth of the tomato was "cut-out", so that the PulpMotion user can project their actual lips/mouth area, thus giving the illusion that the tomato's mouth was moving and tomato was talking to the viewer. The static photo of the tomato also gave the idea that the tomato was sitting at a news anchor's desk.

Procedure

The PulpMotion creations for this study involved the use of the "tomato" host and the "you" host (the course instructor served as the "you"). Both the "tomato" and the "you" themed-host were used to convey key concepts in the area of early childhood special education and to persuade students to engage in critical thinking and discussion on key concepts in early childhood special education. These key concepts were enveloped in hot-topics and humor from popular-culture that were brought forth by students during our face-to-face classroom "warm-up the brain by show & tell" times which took place at the start of class.

Participants were initially introduced to the PulpMotion creations two weeks into the start of the semester via the on-line course shell. Foundational early childhood special education concepts from PowerPoint presentations were embedded into the PulpMotion creations with the course instructor's image discussing and describing the key material from the "host corner" of the computer screen. The "tomato" host, known to the students as "Tanya the Talking Tomato" zoomed in and out of the screen providing comic relief and insights based on the instructor's discussion; specifically Tanya the Talking Tomato comic relief gave insights that were meaningful to students in order to anchor the instructional material. "Tanya the Talking Tomato" was viewed as a quasi-teaching assistant that made learning amusing, yet memorable. Essentially Tanya recapitulated the foundational knowledge in early childhood special education that was given by the instructor and within the non-required readings by weaving it into everyday stories and meaningful understandings of students, thus providing students with an instructional anchor to hook seemingly inert knowledge to.

The PulpMotion software was used as a platform for merging popular knowledge that the teacher candidates found to be interesting, meaningful, and amusing with a new set of knowledge within the parameters of early childhood special education. PulpMotion software was used as a medium that permitted the creation of a cartoon-like, online teaching assistant, Tanya the Talking Tomato, and allowed the theoretical concept of anchored instruction (CTGV, 1990) to be put into practice. It was intended that Tanya the Talking Tomato be a humorous, cartoon-like character that was fun and safe to listen to, would discuss amusing hot-topics brought up during face-to-face class meetings, and would systematically sneak-in important facts necessary for effectively teaching young children with special needs. Essentially, the experiences with Tanya the Talking Tomato were meant to anchor the everyday understandings of teacher candidates to effective early childhood special education teaching practices. For instance, if teacher candidates in the class generally believed in the use of corporal punishment as a means for discipline, Tanya the Talking Tomato would state the same view during her discussion of hot topics but would then engage in a monologue that involved a comical, higher-level rationalization as to why it would not be effective in an early childhood special education classroom. Thus, the use of the PulpMotion software allowed for teacher candidates to connect packets of new knowledge (i.e. McVee et al., 2005) by using their own meaningful understandings as a starting point to actively construct knowledge.

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Pre-service early childhood general educators from the Spring semester's early childhood special education course had the same online discussion topics and the same not-required reading materials as the teacher candidates from the Fall semester. Summative data for Spring semester's student on-line not-required reading and online discussion postings were compared to the Fall semester student reading of not-required materials and student online discussions board postings. Specifically, the total amount of online discussion posting per student and the total amount of online "not required" reading material accessed per student were reviewed. Each of these ratios for each semester was then compared.

Results

Student reading of non-required on-line materials and student input of on-line discussions increased from the previous semester. Pre-service early childhood general educators from the Spring semester had fewer postings and reviews of non-required readings than the Fall semester students during the last three weeks of the on-line monitoring. Teacher candidates in both the Spring and Fall semesters of the same year had similar levels of postings and reading reviews for the first two weeks of on-line monitoring, however during the third week, when the anchored instruction was introduced to the Fall semester teacher candidates, the Fall semester teacher candidates' on-line activity was approximately 23 percent higher than the Spring semester teacher candidates. During the fourth week, on-line activity for the Fall semester teacher candidates was 31 percent higher than the Spring semester teacher candidates. By the fifth week, the on-line activity for the Fall semester teacher candidates was 25 percent higher than the Spring semester teacher candidates. At the end of the semester, fifteen weeks, the Fall teacher candidates maintained the 25 percent higher on-line activity rate than the Spring semester teacher candidates.

Conclusion

Pre-service early childhood teachers presented with the PulpMotion-created anchored instructional video experience were shown to have a marked increase of online discussion board postings and reviews of not-required readings. While a direct causal relationship between the use of PulpMotion and increased on-line discussion activity cannot be inferred, the use of the PulpMotion tomato host may have been one reason for the observed difference in the teacher candidates' online participation. Anchoring key concepts in early childhood special education within meaningful understandings that teacher candidates hold may yield positive outcomes in student interactions within an online course shell. The students who had the anchored instructional experiences also reported sharing their online course experiences within their family and colleagues. Further investigations of PulpMotion-created anchored instructional experiences will collect qualitative data on each participant's thoughts about the anchors in order to investigate potential reasons for differences in online participation.

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Author

Dr Denise NJ Chapman is a Lecturer in early childhood education at Monash University. Her research touches on literacy, digital technologies, and culturally responsive partnerships. Denise has worked as an early intervention/literacy specialist and consultant in both Australia and the United States.
Email: denise.chapman@monash.edu

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