

THE WORLD, TECHNOLOGY, AND I:  
21<sup>ST</sup>-CENTURY COLLEGE STUDENTS' LEARNING EXPERIENCES  
IN A TECHNOLOGY-ENHANCED, MULTIMODAL, DIALOGICAL ENVIRONMENT

by

SZU-YUEH CHIEN

(Under the Direction of MICHAEL OREY)

ABSTRACT

This qualitative study aimed to explore the development and changes in 21<sup>st</sup>-century college students' awareness, skills, attitudes, and construction of selves when they were exposed to a technology-enhanced, multimodal, dialogical learning environment. The design of this environment was inspired by studies in technology integration, multimodality, and dialogism in order to help digital natives bridge the gap between their out-of-school literacy and in-school literacy.

The work employed multimodality as the main thread for the research design, data collection, and data analysis. Central to multimodality, the idea of design proposed by the New London Group was adopted as the design principle. The participants were 33 students enrolled in an introductory course about technology integration in 21<sup>st</sup>-century education in an American university in 2014. In response to the New London Group's idea of design, the participants used available technological resources and personal experiences as *Available Designs* in the process of *Designing* instructional materials. Their reflections on Designing were posted in multimodal personal blogs. The final instructional materials were *the Redesigned* available for other

educators. Data included the participants' instructional materials, reflections and comments on personal blogs, photo-elicitation interviews, and the instructor's observation notes.

The data demonstrated the participants' growth in their awareness and skills in technology use for educational purposes. Instead of using basic features of popular software programs, the participants were able to use a wide variety of technology tools to construct personal understanding. Their experiences in this learning environment helped them become more active and comfortable with employing new technologies in academic contexts.

Beyond the changes in their awareness, skills, and attitudes, the participants constructed various *I-positions*. These I-positions not only helped the participants develop a deeper understanding of themselves within the local communities to which they belonged, but also connected them with global communities where individuals shared the same passions in technology integration in education. The participants exhibited resistance to this technology-enhanced, multimodal, dialogical learning environment at the beginning, but later they agreed that it was a valuable challenge that helped them grow as 21<sup>st</sup>-century global citizens.

INDEX WORDS:     multimodality, dialogism, technology integration, construction of selves,  
                          digital literacy, design

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SZU-YUEH CHIEN

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SZU-YUEH CHIEN

Major Professor:	Michael Orey
Committee:	Theodore J. Kopcha
	Donna Alvermann
	Bob Fecho

Electronic Version Approved:

Suzanne Barbour  
Dean of the Graduate School  
The University of Georgia  
August 2015

## DEDICATION

To my dear mom and dad, I made it.  
Thank you for being my shelter, my support, and my love.

To Barry, it's time to go home.

And home is where you are.

## ACKNOWLEDGEMENTS

*“Do not linger to gather flowers to keep them, but walk on, for flowers will keep themselves blooming all your way.”—Rabindranath Tagore*

Six years in Athens. It has been a long journey. I am so grateful that so many people walked the journey with me. Even though I am saying goodbye to most of you right now, I know I can keep moving forward to a new chapter with your encouragement and love.

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## CHAPTER 1

### INTRODUCTION: 21<sup>ST</sup>-CENTURY LEARNERS' DIALOGUE IN A MULTIMODAL ENVIRONMENT

#### **21<sup>st</sup>-Century Learners: Micah and Mary**

One of my pilot studies was conducted in a suburban middle school to investigate teenagers' identity construction in digital storytelling. After the pilot study was finished, the teacher chose not to continue doing the project because it took too much time from her teaching. I understood her concern; however, I felt bad about leaving one boy in her class, Micah (pseudonym).

Micah is a very shy Mexican boy, but he liked to talk to me. I still can not forget the excitement on his face when he finished his self-introductory digital story. After his story was published on the class webpage, his classmates started to ask him questions about Mexican traditions and their daily lives. Micah was willing to share more about his stories with his friends, but he had no smartphone or computer at home. Hence, he started to go to the public library every day because he wanted to see the comments and answer the questions from his classmates.

After the focus group interview, Micah told me that he loved this activity so much because his classmates became friends with him. In addition to making more friends, Micah also developed a stronger interest in writing, and even his teacher had noticed it. He became interested in writing his stories and wanted to create more digital stories to help his classmates know more about him and his culture. As a researcher, I saw Micah's passion in using

technology in his learning as well as in his personal life even though he did not have many resources and had limited access to the Internet.

Compared to Micah, my undergraduate students helped me see a completely different phenomenon. Walking on campus, riding on the bus, and dining out, almost whenever and wherever I am, I see college students connected online via different devices. The students enrolled in my class about technology integration for pre-service teachers showed the same pattern.

Mary (pseudonym), a freshman in college, always arrived in the classroom about five minutes before we started in Spring Semester 2013. Walking into the classroom with her headphone and checking her smartphone, she went to her seat without greeting her neighbors who were either checking emails on their laptops or communicating via instant messenger with their friends. Later that semester, I started to hear Mary greeting her neighbors; however, all of them were still listening to music, checking emails, texting their friends or surfing on the Internet after the short hello. Technology has been pervasive in all aspects of Mary's life.

However, Mary surprised me with her low proficiency and competence even in the basic word processing programs. Before enrolling in this class, she never created a blog or edited any video clips, not to mention using applications or other web 2.0 tools for educational purposes. Her first PowerPoint® presentation in my class was wordy with many bulletin points. Nevertheless, Mary was not the only student who surprised me with her ineffective technology use in personal learning. Most of my undergraduate students were amazed at how much technology could do to help them learn better as we moved on.

Thinking of Micah and Mary at the same time, I realize that there is a serious problem in 21<sup>st</sup>-century learning. That is, 21<sup>st</sup>-century learners do not know how to take advantage of

valuable and available technological resources to create meaningful learning experiences. They need guidance. Once they learn how to effectively integrate technology into their personal learning, they can be more motivated and engaged in learning. I often think about one question—how can I assist my 21<sup>st</sup>-century college students to create meaningful and significant learning experiences with the aid of technology? Inspired by the multimodal affordances of emerging technologies and dialogical self theory, I am interested in creating a technology-enhanced, multimodal, dialogical learning environment for my college students to investigate the influence of this learning environment on their awareness, skills, and attitude as well as the construction of selves. In this chapter, the conceptual framework, the research questions, and the significance of this study will be presented. I will start with a short description of emerging technologies in 21<sup>st</sup>-century learning and 21<sup>st</sup>-century learners' digital literacy practices.

### **Emerging Technologies, 21<sup>st</sup>-Century Learners, and Digital Literacy Practices**

Emerging technologies provide opportunities for every individual to contribute, participate, and collaborate in the process of making meaning (Lankshear & Knobel, 2007). Educators expect that younger generations will cultivate the competences they need to become global citizens and lifelong learners with the aid of emerging technologies. The Partnership for 21<sup>st</sup> Century Learning, a national organization advocating 21<sup>st</sup>-century skills for every individual, believes that 21<sup>st</sup>-century learners should develop “1) life and career skills, 2) learning and information skills that include critical thinking, communication, collaboration, and creativity, and 3) information, media, and technology skills” (The Partnership for 21<sup>st</sup>-Century Learning, 2015a, p.2). These skills are required for each individual not only in an academic context but also in their daily lives. Therefore, how to effectively integrate technology into academic contexts to help 21<sup>st</sup>-century learners develop these skills has become a prominent topic.

Learners in the 21<sup>st</sup>-century are called *digital natives* (Prensky, 2001), *Millennials* (Howe & Strauss, 2000), or *the Net Generation* (Oblinger & Oblinger, 2005; Tapscott, 1998). It is believed that younger generations growing up with all kinds of information and communication technologies (ICTs) are naturally proficient with these technology tools and highly involved with various digital literacy activities. The younger generation is good at multitasking with technology tools and is engaged in active learning (Howe & Strauss, 2000; Prensky, 2001; Oblinger & Oblinger, 2005; Tapscott, 1998). These so-called digital natives spend a lot of time surfing on the Internet to acquire the information they need and communicating with others in different online settings. People believe the younger generation learns differently from previous generations and therefore, education needs to be changed to best meet their needs (Howe & Strauss, 2000; Prensky, 2001; Oblinger & Oblinger, 2005; Tapscott, 1998). However, these beliefs are not supported by empirical studies and have initiated a lot of discussions and debates. There is a strong need for theoretically informed research to understand the younger generation's use of technology for educational purposes.

Another salient characteristic of the younger generation is their high involvement in various literacy activities related to ICTs. The surge of easy access to the Internet has dramatically changed the way people perceive and convey information in just the past two decades. The term literacy, therefore, remains highly contested. Researchers and educators are particularly interested in challenging the conventional definition of literacy that means an individual's ability to read and write paper-based texts (Brandt and Clinton, 2002; Gee, 1999, 2000, 2008; Hull and Schultz, 2001; Lankshear and Knobel, 2006, 2007; New London Group, 1996; Street, 1984, 2003). The psychological perspective of viewing literacy as a decoding and coding process in an individual's head ignores the influence of the context. Therefore, a group

of researchers has adopted a sociocultural approach to view literacy as a human social practice and promoted this approach as the New Literacy Studies (Brandt & Clinton, 2002; Gee, 1996; Heath, 1983; Hull and Schultz, 2001; Pahl & Rowsell, 2006; Scribner and Cole, 1981, Street, 2003). They believe that literacy is what people use to communicate and to accomplish different tasks within various social and cultural contexts (Gee, 2008). Each individual, living in a culturally and linguistically diverse world containing multiple communication channels, plays the role of “participants in social change and learners and students who can be active designers—makers—of social futures” (New London Group, 1996, p. 64). Individuals’ literacy activities have social power.

Central to this belief, Brian Street, a New Literacy Studies advocate, further made a distinction between literacy events and literacy practices. In agreement with Heath (1983), Street (2003) considered literacy events to be an individual’s engagement in reading or writing. However, Street (2003) defined literacy practices to be “the broader cultural conception of particular ways of thinking about and doing reading and writing in cultural contexts” (p.79). An individual’s literacy practices are ideological representations of himself within the communities to which he belongs.

These new literacy activities that younger generations are engaged in sometimes are considered their digital literacy. It focuses on the younger generations’ knowledge and skills in using emerging technologies. However, I consider Street’s definition of literacy practice an important concept when I think about the younger generation’s digital literacy online activities. Understanding their skills and knowledge is important; however, it is more significant for researchers to understand their attitudes and construction of selves in even more complicated and complex online digital literacy activities. Therefore, I use the term digital literacy practices

throughout this study in order to seek answers to my inquiries about 21<sup>st</sup>-century college students' awareness, skills, attitudes, and constructions of selves in their out-of-school and in-school digital literacy practices.

### **Problem Statement**

When the Internet was still a developing trend, Windschitl (1998) proposed that education researchers needed to investigate the phenomenon of popular web-based instruction in order to create meaningful learning experiences. Greenhow, Robelia, and Hughes (2009) took Windschitl's suggestion and further proposed that the intersections of 21<sup>st</sup>-century learners' in-school literacy and out-of-school literacy should be the focus of future research. Their proposed idea aligns with many educational researchers' suggestions on conducting sound empirical studies in understanding the relationship between the younger generation's daily digital literacy practices and their learning performances in schools.

Kress (2003) indicated that there is a discrepancy between adolescents' literacy practices in school and out of school. The dominant literacy practice at school is still mostly print-based texts, while the popular literacy practice out of school has gradually shifted to multimodal screen-based texts. Kress (2003) indicated that multimodal texts usually appear in different forms of literacy. An important issue in literacy education is that 21<sup>st</sup>-century learners are familiar with and good at using various new literacies to make meaning out of school, but these new literacies are still not effectively used in school.

Many research studies about digital natives' performances at home and in school have presented findings that support Kress's idea. The so-called digital natives are not *naturally* proficient with emerging technologies as most people assumed and their high involvement with emerging technologies is seldom transferred to school settings (Bennett & Matont, 2010;

Kennedy, Judd, Dalgarno, & Waycott, 2010; Lorenzo & Dziuban, 2006; Lorenzo, Oblinger, & Dziuban, 2007; Ng, 2012; Thompson, 2013; Waycott, Bennett, Kennedy, Dalgarno, & Gray, 2010). For example, Kennedy et al. (2010) identified four types of users among their participants. The “power users” who frequently and actively used many emerging technologies to create artifacts were actually the minority (14%) in their study. In Ng’s (2012) study, her undergraduates were comfortable with the use of emerging technologies in their daily life, but they were not comfortable and confident enough to use these technologies for their own learning.

On the other hand, Gurung and Rutledge (2014) found that digital natives’ performance in school and at home showed some overlapping in their use of technology. Their participants listened to music in class to become more focused and texted frequently. Gurung and Rutledge (2014) argued that teachers could no longer set up restrictions in the students’ bringing their digital habits to a school setting because these digital literacy practices could help them be more engaged. However, Bennett, Maton, and Kervin (2008) indicated that the differences in digital natives’ out-of-school literacy and school literacy could not be considered the reason for their disengagement. Therefore, it is still essential for educational researchers to explore the relationship between the younger generation’s knowledge and skills in using ICTs in and out of school.

In short, 21<sup>st</sup>-century learners’ out-of-school digital literacy practices should be connected to school-based practices in order to encourage digital natives’ meaningful learning. If this discrepancy can be solved, literacy, encompassing not merely texts but also other modes in different forms of ICTs in various sociocultural contexts, will act as a necessary catalyst that helps individuals in the 21<sup>st</sup>-century become cosmopolitan citizens.

Starting from the 1980s, literacy practice has been deemed as a social process in which people build relationships with others and construct their own identities in this global village (Gee, 2008; Street, 1984; Warschauer, 2010). Literacy practices of the 21<sup>st</sup>-century learners occur not only in the physical world but also in various virtual worlds. Globalization in both the virtual and physical worlds influences the perspective that people take to view others, the world, and most importantly, themselves. Individuals make meaning through various modes to represent themselves and to communicate with others. Learning how to position and identify oneself and enacting agency both locally and globally are important issues that have drawn the attention of researchers in various fields (Bandura, 2008; Hermans & Dimmagio, 2007; Hull, Stornaiuolo, & Sahni, 2010).

To help the younger generation narrow the gap between their out-of-school literacy and in-school literacy, I designed a technology-enhanced, multimodal, dialogical learning environment for 21<sup>st</sup>-century college students enrolled in a technology integration class. In the meantime, by looking into their artifacts created in this learning environment, I expect to better understand how 21<sup>st</sup>-century college students position themselves in various interactions with others in the physical classroom and virtual learning space.

### **Conceptual Framework**

According to constructivism researchers, children learn through interactions and experiences in their daily life. Learning is like the process of meaning-making. Individuals' mediation with different tools and signs helps convey their ideas to others (Vygotsky, 1978). The affordances provided by emerging technologies in the 21<sup>st</sup> century create more diverse opportunities for individuals to interact with others and thus create the possibility for more learning experiences. The learning experiences of digital natives in the 21<sup>st</sup> century are highly

related to technology use. Providing a technology-enhanced learning environment is a basic requirement in most teaching and learning scenarios.

Emerging technologies have one obvious similarity; they are multimodal. Different technology forms have different affordances (Kress, 2000, 2009). Van Leeuwen (2011) pointed out that multimodality, including composition, framing, color and typography, could change the role of language in meaning-making processes and thus help individuals develop multiliteracies. The New London Group (1996) proposed the idea of design in an individual's development of multiliteracies. Using *Available Designs* in the *Designing* process to create *the Redesigned* is a cycle of how individuals make meaning in today's society (New London Group, 1996). Based on their ideas, I decided to provide a multimodal environment in which the participants could create meaningful learning experiences.

Both experiences and interactions with others play a significant role in individuals' learning. When an individual presents his idea, others will have different responses. Bakhtin (1986a) illustrated the relationship between discrete utterances and communication by using the example of the links in a chain. Each utterance is a link in the chain of speech. Visualize a linked utterance with an obvious closure, yet there is always the possibility to connect the link to another link and thus continue the chain. In this way, an utterance is not merely an expression, but it is also a creation to initiate future discourses.

When an individual creates an utterance, he anticipates responses from others. Therefore, the individual integrate the self that he wants others to think about him in the utterance. The self will change in relation to others' responses. This idea of utterance and self from Bakhtin greatly influenced Hermans and Hermans-Konopka and gave birth to dialogical self theory. Hermans and Hermans-Konopka (2010) described the concept of self in dialogical self theory is a unified

representation of *I, me, or mine* in multiple positions and interactions with others. Therefore, an individual's positioning and repositioning of *I, me, and mine* as a unity in relation to others and in various sociocultural contexts becomes the central idea of dialogical self theory (Hermans & Hermans-Konopka, 2010). They called this idea *I-position*. Therefore, an individual will have multiple I-positions. To understand an individual's different I-positions is an important issue not only for researchers but also for each individual.

Bakhtin's (1986a) metaphor and the idea of I-position in dialogical self theory inspired me to design a dialogical learning environment, not just in the physical classroom but also in the virtual learning space. It was anticipated that dialogues with their peers about their learning experiences would enhance their construction of the content knowledge, their meaning-making ability, and their understanding of themselves.

The participants in my previous pilot studies showed that educators needed to help learners work on developing the skills promoted by the Partnership for 21<sup>st</sup> Century Learning with the aid of emerging technologies. Emerging technologies could empower the participants to bring in what they were familiar with in their personal life to their formal learning situation. In addition, these experiences helped my previous participants connect and build better relationships with others and improve their learning. Having communication with their peers helped the participants construct new knowledge about the world they lived in. These findings led me to seek answers to the questions about 21<sup>st</sup>-century college students' learning. With easy access to all kinds of advanced hardware and software programs, how can tertiary level educators help college students learn better? How can tertiary level educators bridge the gap between college students' use of technology in daily life and in their learning? The purpose of this study was to better understand 21<sup>st</sup>-century college students' awareness, skills, attitudes, and

I-positions relating to their digital literacy practices both out of school and in school. With a better understanding, it is hoped that practitioners will find strategies to connect 21<sup>st</sup>-century college students' out-of-school and in-school digital literacy.

Under the influence of constructivism, I believe that learning is enhanced by individuals' experiences and interactions with others. Emerging technologies provide many different kinds of channels for individuals to communicate with each other in different modes and thus create a great number of significant learning experiences. Inspired by studies in technology integration, multimodality, and dialogism, this technology-enhanced, multimodal, dialogical learning environment was created to help me investigate 21<sup>st</sup>-century college students' digital literacy practices in order to improve their learning performance.

### **Research Questions**

This study aimed to better understand 21<sup>st</sup>-century college students' learning experiences in a technology-enhanced, multimodal, dialogical learning environment so that educators can help learners create more meaningful learning by connecting their out-of-school literacy and in-school literacy with the help of different technologies. To further explore this phenomenon, the following research questions are addressed in this study:

1. What awareness, skills, and attitudes do 21<sup>st</sup>-century college students exhibit in a technology-enhanced, multimodal, dialogical learning environment?
2. What happens to 21<sup>st</sup>-century college students' construction of various I-positions when they engage in a technology-enhanced, multimodal, dialogical learning environment?

### **Significance and Implications**

This study challenged college students to apply their out-of-school literacy to their formal learning at school. Multimodal compositions and online discussions were what 21<sup>st</sup>-century

colleges students did with their friends on a daily basis; however, these were frequently missing in their course-related performances. The challenge for the participants was to magnify the possibilities of using both old and new technology tools to help them create significant learning experiences. Moreover, they developed the capability to apply this knowledge and these skills to their future positions. The participants were asked to compose multimodal artifacts and to participate in online discussions in this technology-enhanced, multimodal, dialogical learning environment. It was anticipated that this different environment would help them apply what they were comfortable doing in their daily life to their academic context. This study should inform the knowledge base regarding the cultivation of 21<sup>st</sup>-century learners' digital literacy practices and the construction of selves. Moreover, it should provide possible pedagogical strategies for tertiary level educators to improve college students' learning experiences and to prepare them for their future workplace.

## CHAPTER 2

### LITERATURE REVIEW

The purpose of this study was to understand the influence of a technology-enhanced, multimodal, dialogical learning environment on 21<sup>st</sup>-century college students' awareness, skills, attitudes, and their various I-positions in their digital literacy practices. Therefore, in this chapter, literature regarding technology-enhanced learning, multimodality, and dialogism will be reviewed and presented in three sections. In each section, I will present my review of the literature on studying each topic and address the importance of integrating these three topics in 21<sup>st</sup>-century learning. This chapter concludes with the idea of integrating these three ideas into the design of a technology-enhanced, multimodal, dialogical learning environment for 21<sup>st</sup>-century college students.

#### **Why a Technology-Enhanced Learning Environment?**

*“Technology is nothing. What’s important is that you have faith in people, that they’re basically good and smart, and if you give them tools, they’ll do wonderful things with them.”—Steve Jobs*

#### **Active Learning and the Rise of Emerging Technologies**

Educators are always searching for the best and the most effective strategies to help learners. The traditional perception of learning environments is usually connected with the concepts of directed-teaching methods and teacher-centered classrooms where learners play more passive roles. In a teacher-centered classroom, lecture is the primary practice and therefore, knowledge is transmitted from teachers to students. Students have fewer opportunities to interact with others or to construct new understanding.

Many researchers and educators interested in children's development have found that children learn through experiences and interactions with others in social contexts (Dewey, 1938; Vygotsky, 1978). As a result, a student-centered approach has been emphasized in schools since the 90's. When educators get students engaged in class activities or assignments active and meaningful learning happens. Students will be able to connect new knowledge with existing ideas to construct a personal meaning and understanding.

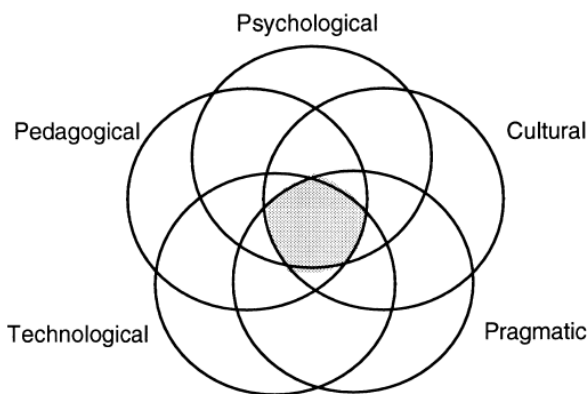
Since the late 90's, advancements in technologies have given educators more opportunities to create student-centered learning environments. Many computer-enhanced learning environments are interactive, multimedia environments where learners can get immediate feedback and therefore, learners are motivated to achieve academic goals. Hannafin (1992) indicated that computer-enhanced learning environments encourage students to be more engaged in learning activities. Students' increasing engagement leads to better performances. Technology integration, as a result, has gradually developed into an essential element in 21<sup>st</sup>-century teaching and learning.

### **Technology-Enhanced Learning Environment**

According to the Technology in School Task Force (2003), technology integration means that technology resources and technology-based practices are assimilated into individuals' lives. Individuals might use software programs or hardware to collaborate with others at work, at school, or in their daily routine. In concert with this definition, technologies should be considered tools for educators and learners to construct knowledge and make meaning in their teaching and learning. The most indispensable component in the idea of technology integration is still people. The primary inquiry about technology integration in education should be how

individuals use technology to facilitate teaching and learning to achieve their goals, rather than what devices individuals use for teaching and learning.

As a result, how to create technology-enhanced learning environments has become a critical issue for educational researchers and practitioners. Hannafin and Land (1997) proposed five foundations supporting the idea of technology-enhanced, student-centered learning environments. The five foundations are psychological, cultural, pragmatic, technological, and pedagogical foundations. Figure 1 illustrates their integrated view of these five foundations in an ideal technology-enhanced, student-centered learning environment.



**Figure 1** “A conceptual representation of a balanced, integrated technology-enhanced student-centered learning environment” (Hannafin & Land, 1997, p. 179).

Hannafin and Land (1997) acknowledged that it is rare and challenging to ideally integrate all the five foundations when educators design technology-enhanced student-centered learning environments. However, educators still need to consider these foundations during the instructional design process in order to encourage active learning. After all, students benefit the most when they are actively engaged in learning activities. The construction of meaningful personal understanding happens when students learn to take advantages of the resources and tools available in the learning environment (Jonassen & Reeves, 1996).

In technology-enhanced learning environments, emerging technologies should be considered scaffolding tools for learners to engage in cognitive activities (Sharma & Hannafin, 2007). Technologies should not be considered a panacea for successful learning. Reeves (2011) pointed out that the main reason many educational researchers fail to find significant differences in studies regarding the effects of instructional technology is the wrong research focus on the delivery modes instead of the pedagogical factors.

### **The Technology-Enhanced Learning Environment in this Study**

In this study, the participants enrolled in this class to learn how to integrate technology into their personal learning and their preparation for a future workplace. A technology-enhanced learning environment was helpful for them to practice their digital literacy for educational purposes. Even though the technology-enhanced learning environment was not a balanced one as Hannafin and Land (1997) suggested, the participants still had the opportunity to engage in active learning with multiple hands-on activities. Learning the skills to use appropriate technologies for various learning tasks was a basic need of the participants. A more important objective was to help the participants develop a learner-technology partnership to deepen their understanding in their learning and their lives.

However, technologies should be clearly defined in this study. The major focus in this learning environment was on instructional technologies. Cuban (1986) specifically defined instructional technology as “any device available to teachers for use in instructing students in a more efficient and stimulating manner than the sole use of the teacher’s voice” (p.4). Therefore, technologies in this study included more recent and emerging technologies and earlier inventions. For example, the participants used old technologies to make traditional posters and new technologies of applications to make e-posters. The diversity of the technologies adopted in

this study provided various opportunities for the participants to construct personal understanding and applications of new knowledge in their learning and daily life.

### **Why Multimodality?**

*“The aim of art is to represent not the outward appearance of things, but their inward significance.”—Aristotle*

Multimodality is not an innovative idea. All communications and interactions are multimodal. Text, image, gesture, and even gaze are different modes that convey meanings. According to Kress (2009), “Mode is a socially shaped and culturally given resource for making meaning” (p.54). Anything can be used as a mode to convey an individual’s thought, feelings, and ideas. From this perspective, all meaning-making activities can be seen as representations of multimodalities.

Kress (2003) indicated that meaning usually involves two types of work, articulation and interpretation. In articulation, the sign is sent outward to the recipient as a signifier, while in interpretation, the recipient is required to create another sign based on the signifier he receives. During this articulation and interpretation process, meaning can be “made, distributed, received, interpreted and remade in interpretation through many representational and communicative modes” (Jewitt & Kress, 2003, p. 1). A particular mode might have one specific meaning in a social context and carry another distinct meaning in another social context.

From the perspective of social semiotic theory, the recipient’s interpretation might be different from what the sign-maker tries to convey (Jewitt & Kress, 2003; Kress, 2010). Cope and Kalantzis (2000) explained that the design of meaning is involved in multimodal meaning which is more than “the sum of linguistic, visual, spatial, gestural and audio modes of meaning” (p. 211). The process of combining all the possible modes, and the interpretation and exchanges between various modes, are the foci of multimodal meaning. Therefore, multimodality is used as

a theoretical approach to understand how individuals make meaning across to others by creating multimodal compositions.

Multimodal compositions play a meaningful role in teaching and learning as well. While many literacy practices have gradually shifted to multimodal screen-based texts, researchers are interested in investigating the influences of multimodality on individuals' learning in both formal and informal settings (Lankshear & Knobel, 2006; Marsh, 2006; Mavers, 2009; Stein & Slonimsky, 2006). Hannafin and Land (1997) pointed out that learners are encouraged to make artifacts to show their understanding in technology-enhanced learning environments. The affordances of emerging technologies provide different ways for learners to present their ideas and newly constructed knowledge in different modes.

### **Multimodality and Technology**

With the proliferation of technologies, meaning and human knowledge come together in multiple modes within social and cultural contexts. The dominance of screen-based environments filled with images and texts considerably changes how researchers and educators think of literacy and how individuals make meaning to communicate and interact with others. Jewitt and Kress (2003) indicated that different modes are significant elements in literacy practices in which people exchange information and messages and construct knowledge. For example, it is common to see a strong relationship between texts and images in the act of writing in the technology era. However, modes can cross the boundary of texts and image, especially in the technology era.

The burgeoning variety of new technologies has dramatically altered the ways people interact with each other and the ways people perceive and convey messages and information.

Technology maximizes the possibilities for using different modes in literacy practices.

Lankshear and Knobel (2006) identified that the new literacies related to new information and communication technologies are presented in multiple modalities. Different from conventional literacy practices that are usually paper-based, these post-typographic new literacy practices combine various forms of language, images, and sounds. These various affordances help individuals easily handle digital–electronic apparatuses and thus create new multimodal literacies (Jewitt & Kress, 2003; Lankshear & Knobel, 2007; Stone, 2007). A post-typographic reader is challenged in a different sense to “comprehend” the text and to create meaningful multimodal artifacts in turn.

However, what multimodality brings to the new literacy practices is not limited to the influences of the use of tools and affordances. Multimodality has a deeper influence on the *ethos stuff* related to one’s mindset (Lankshear & Knobel, 2006). The use of Web 2.0 tools in digital literacy practices has had substantial influence on social practices and has resulted in yet more social changes. Many established social practices, traditions, and conventions are challenged to transform and adjust. Consequently, new meanings of social practices are created, distributed, exchanged, and reproduced throughout various multiple modes.

Each individual is responsible for these changes and needs to learn to accept these changes. This kind of new literacy practice requires people to participate more actively in meaning-making activities and to collaborate with others more frequently. Multimodality, serving as a meaning-making and design tool, creates opportunities for each individual to join the participatory and collaborative culture. The affordances provided by technology empower individuals to activate their agency in different aspects.

For example, in Reiss and Young's (2013) classroom, they found that their students' learning experiences were enhanced when they were required to create multimodal compositions. In addition, the richness in the various modes within different technology resources helped their students to be more creative. Multimodality embodied in most of the innovative digital-electronic apparatuses is a channel for 21<sup>st</sup>-century learners to participate in a more distributive, collaborative, and participatory learning environment.

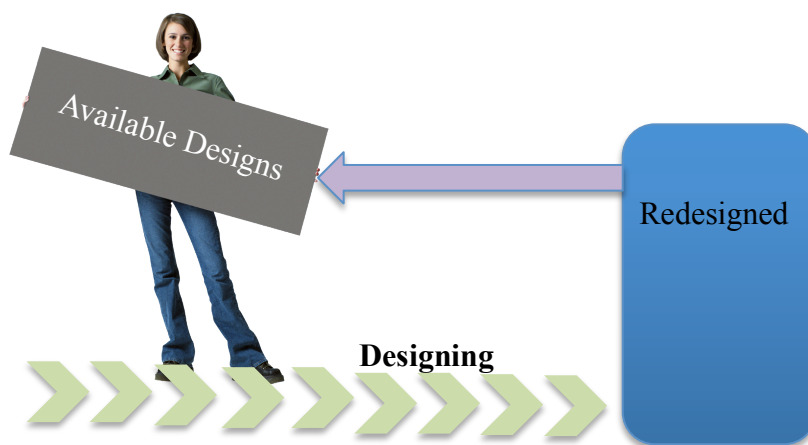
### **Multimodality and Design in Education**

The idea of design has gained much more attention and has been widely used in many fields in the past two decades. Communication is a kind of design; therefore, design itself has the ability to shape social relations and positions. At the same time, design is also influenced by social change (Kress, 2010). For example, the rapid technological changes since the 90's have strongly promoted the idea of multimodal design to each individual. More and more new designs have been created to improve the quality of life. This change is also seen in education. Interactive multimedia materials are designed and created to enhance learning. With new materials, students and educators are able to play the role of designers who bring their personal interests, experiences, and agency into the construction of knowledge (Cope & Kalantzis, 2000; Jewitt, 2008).

The New London Group (1996) indicates that the increasing use of multiple modalities for communication and meaning-making in individuals' lives and the stronger connection between local and global diversities are two critical issues in literacy education and in regard to individuals' social future. This group of researchers believes that meaning-making is a design activity because individuals can use various modes to convey their thoughts to others. Their idea

of design includes three elements: Available Designs, Designing, and the Redesigned. The meaning of each element is presented in the following section.

*Available Designs, Designing, and the Redesigned* were presented in the New London Group's (1996) framework for pedagogical implications for literacy educators. Available Designs refer to "the resources for Design" (New London Group, 1996, p.74). They can be "grammars of languages and the grammars of other semiotic systems such as film, photography, or gesture" (New London Group, 1996, p.74). The meaning of Available Designs is similar to Gee's (2008) idea of Discourse/discourse that views individuals' language uses within a specific sociocultural context or a specific group of people. While we are using these Available Designs to construct knowledge, to make meaning, and to communicate with others in different semiotic activities, we are in the process of Designing. During the semiotic process of Designing, we also construct different selves and negotiate new meanings and therefore, the Redesigned is created and becomes a new Available Design. This cycle of design is necessary in the meaning-making and knowledge construction process.



**Figure 2 My understanding of the idea of design presented by the New London Group.**

I created figure 2 to present my understanding of the New London Group's idea of design. As it shows in the figure, the individual uses available resources as her Available Designs and

move into the process of Designing. I use the green arrows to represent the Designing itself is a process. At the end of the Designing process, the individual created a new product called the Redesigned. The Redesigned, at the same time, can be another Available Design for her or others to use in the future. When the New London Group presented their idea of design to the world, they focused on the social changes that design can bring to individuals' lives. Even though my adoption of their idea did not focus on the social changes they promoted, I believe that the participants will experience certain changes in their personal learning and their interaction with others. From this aspect, I expect to see changes in the participants' individual cosmos. These changes in their personal cosmos will eventually lead to bigger changes in their future career and thus become sources of social changes.

### **Multimodality Design in this Study**

In this study, the participants came from different backgrounds and specialties in different fields and thus created a complex sociocultural learning context. Except for the technology tools they had, their classmates and instructors were also the participants' Available Designs. The participants were required to use these Available Designs to construct their knowledge about learning in a digital era. While the participants were constructing their understanding about learning in the 21<sup>st</sup> century, they also needed to reflect on their personal learning experiences and to create learning materials for others. The Designing was a hybrid of the participants' learning experiences in the past, the present, and the future. According to the New London Group, the Designing process provided the participants with the opportunity to craft different I-positions and to transform their perspectives of the world. The new meanings of learning and self-understanding were created as the Redesigned and were connected with their new experiences in the future.

## Why Dialogical?

*“All the world's a stage,  
And all the men and women merely players:  
They have their exits and their entrances;  
And one man in his time plays many parts,  
His acts being seven ages.”—William Shakespeare*

Every individual is like an actor on the stage. The moment when the curtain rises, the performance needs to go on. When the spotlight focuses on the actor, he knows he is the center of the audience's attention. He needs to interact with other actors and actresses or the settings. Sometimes, he even needs to interact with the audience. Before standing on the stage, he is prepared to perform the character. It is possible for the actor to be more of the character because of the spotlight and the interaction with others. The interaction we have with others enriches our lives and helps us understand ourselves better.

A learning environment is like a microcosm of life. Learning is a dynamic process that requires individuals to interact with people and the environment. Educators create the learning environment where individuals learn to construct and deepen their understanding of the world and themselves. Leggo (2008) indicated that it is essential for us “to be connected with words that represent as well as challenge our daily understandings of who we are and who we are becoming” so we can realize that we are unique in the world (p. 92). We all position ourselves differently within our daily discourses (Bakhtin, 1981, 1984). How we see and feel about ourselves has strong impacts on the way we interact with the world and others and also how they interact with us.

### **Bakhtinian Thoughts: Discourses Are Social Phenomena**

Many researchers influenced by Bakhtin's dialogical approach have advanced his ideas and argue that an individual's self is never an entity in itself. In fact, the self is a product

fabricated through the discourse that an individual has with others (Bakhtin, 1981, 1984; Bruner, 1991; Gee, 2008; Hermans & Dimaggio, 2007; Hermans & Hermans Konopka, 2010; Hull & Kultz, 2006; Hull, Stornaiuolo, & Sahni, 2010; Michael & Wortham, 2002; Raggatt, 2006; Wortham, 2000, 2001). Discourse is personal, social, historical, and cultural; thus, the constructed self is ideological and dialogical within social relationships.

Bakhtin (1981) believed that languages are socio-ideological. Every discourse is a social phenomenon. Language is active and alive in everyone's daily life. Language in use represents an individual's discourses (Gee, 1996). Gee (1996) claimed that a social and cultural perspective is needed to understand discourses because meanings of words cross the boundary of pure definitions. Furthermore, meanings of words are connected with each individual's beliefs, knowledge, and interactions with others in the world. Each word in a discourse includes meanings formed in the speaker's internal dialogism and meanings interpreted in harmony or dissonance with others. Gee (2008) indicated that meanings of words are not separable from the individual's cultural model, context, negotiation, and social interactions. Each individual's utterance is influenced by all these factors.

### **Passive and Responsive Understanding in Dialogues**

According to Bakhtin (1981), language is always “overpopulated—with the intentions of others” (p. 294). We need to learn how to appropriate it. In traditional learning environments where direct teaching dominates the learning, learners merely develop passive understanding. As Bakhtin (1981) defined it, passive understanding emphasizes the understanding of the utterance rather than the interaction between the articulator and the audience. With the help of language, we employ others' words and relevant conceptions and ideas to construct knowledge. This internalization process converts the passive understanding into responsive understanding.

Vygotsky (1978) also indicated that language mediates learning and children's development. Individuals use tools and signs as mediation artifacts to represent what they want to convey to others. Therefore, it is important to consider creating a dialogical learning environment to enhance learners' responsive understanding.

A dialogical classroom has the potential to invite more diverse voices in order to facilitate responsive understanding. A great many voices engage in discourse, as do a great many background factors. Discourse, therefore, is personal, social, cultural, and historical. This is the phenomenon of heteroglossia (Bakhtin, 1981). Everyone is an agent in discourse. Everyone's voice can be heard. The discourse, as a result, is a place where multiple opinions are addressed. This kind of juxtaposition of diverse perspectives in discourses and in texts is in line with Freire and Macedo's (1987) assertion that reading the word is actually reading the world.

### **A Dialogical Classroom**

Bakhtin's idea of heteroglossia in which everyone is an agentive speaker who can enter into others' territory with personal ideologies is very interesting to me. Living in the world, we all have common things that we are familiar with. At the same time, we all have our own exclusive experiences or opinions. It is the interaction among us that makes life full of varieties. According to Freire and Macedo (1987), knowledge is found in interactions and dialogues. However, most classrooms today lack this kind of interaction because of the over-emphasis on standardized examination. Teachers should change this one-way instruction into a co-constructed learning. Teachers should allow students' voices to be heard. Teachers should try their best to make heteroglossia happen in classrooms.

A dialogical classroom is particularly in need in 21<sup>st</sup>-century teaching and learning. The increasing prevalence of online social networks breaks down geographical borders and provides

individuals with opportunities to participate in the global society. Globalization has dramatically changed our daily lives. The term *global village* helps individuals visualize how close they can be with others. This cultural and social interconnectedness is a profound force that encourages more and more dialogues among different groups of people. Hermans and Hermans-Konopka (2010) indicated that a dialogical relationship is necessary in today's interconnected world. The New London Group (1996) also pointed out the importance of global-local connectedness. In the global discourse setting, each individual is a participant in the global village; at the same time, each individual is a representative of his/her own local community. With increasing opportunities to position and reposition back and forth in local and global contexts, each individual can have more dialogue with others and create multiple possibilities for the self.

### **Dialogical Self**

The process of having dialogues is a process of constructing and transforming the perception of self. When an individual tells a personal experience, he is representing the inner self and can transform the self and perform similarly to the self that he wants to become (Wortham, 2000, 2001). When the individual is telling the experience, the meaning is not made in his mind only. Rather, meaning-making happens between the individual and his audiences. The individual, therefore, will position himself differently when interacting with different audiences. This idea of positioning one's self in relation to himself and to others in different contexts is the central tenet of dialogical self theory (Hermans & Hermans- Konopka, 2010). In each positioning, each dialogue is a form of social action through which the self is constructed, performed, and reified. The unity of I, me, and mine is sensitive to all possible positions and actively tries to appropriate and represent the self according to time and space.

Another important feature of dialogical self theory is that Hermans and Hermans-Konopka (2010) emphasize the local voice and the global voice. The local-global dialogues are an unstoppable trend. Individuals take part in these dialogues and construct various identities or position themselves differently. All these different positions influence individuals' behaviors, thoughts, and understanding of the world. Most important of all, these self-positions transform individuals into agents who actively get involved in social practices in their daily lives (Hermans & Hermans Konopka, 2010).

### **The Dialogical Learning Environment in this Study**

In this study, the participants were paired up with each other in different projects. They had opportunities to bring in personal opinions and experiences to design instructional materials. In addition, they were required to read and comment on their peers' reflections to help each other develop an understanding of technology use in education in the 21<sup>st</sup> century. These interactions provided the participants with opportunities to practice meaning-making and to re-examine and position themselves differently when they needed to talk with different audiences in both the physical classroom and the virtual online space. According to Bakhtin's metaphor of chain, each interaction was like a new link in the chain and through the addition of these links, the dialogical relationship was created among the participants. This idea is similar to the New London Group's pedagogical implication of the design cycle. Every individual brings in the Available Designs in the Designing process and thus creates the Redesigned. Then the Redesigned can be used as a new Available Design for a new meaning-making process. This concept of the chain of meaning-making illustrates the importance of a dialogical relationship in this study. The dialogical relationships among the participants were expected to help the participants construct knowledge and deepen their understanding of their digital literacy practices and themselves.

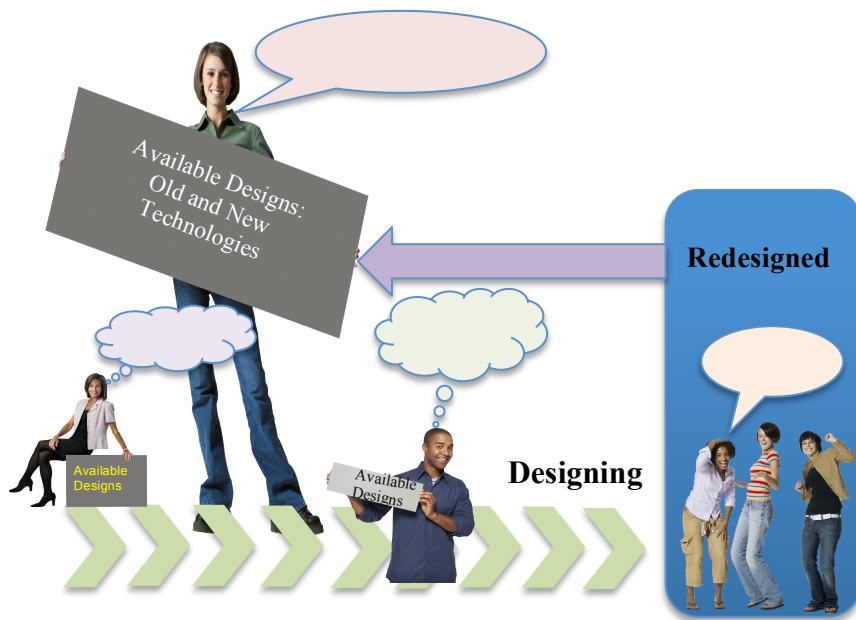
## **A Technology-Enhanced Multimodal Dialogical Learning Environment**

*“If we teach today’s students the way we taught them yesterday, we rob them of tomorrow.”—John Dewey*

Learners in the 21<sup>st</sup> century are different. They have access to many resources that previous generations never had. Teaching and learning in the 21<sup>st</sup> century is also different because of the proliferation of and easy access to emerging technologies. We strongly encourage 21<sup>st</sup>-century learners to develop abilities in creativity, communication, collaboration, and critical thinking. However, as educators, we struggle to find appropriate ways to help learners meet these goals.

When I was reading all this literature in classes, I felt I positioned myself in a 21<sup>st</sup>-century learning environment where traditional and emerging technologies are available for me to create and design more authentic learning activities. Then I recalled my dream and goal when I came to America for advanced study. I wanted to develop up-to-date materials, to create an environment where fun and challenge coexist, and to design engaging activities for my future students to enjoy learning what they need and want. Thus, this idea of creating a technology-enhanced, multimodal, dialogical learning environment was born. To help my readers understand my idea of this learning environment, I designed Figure 3 to explain my design inspired by the New London Group’s idea of design of the technology-enhanced, multimodal, dialogical learning environment. Each individual has access to various Available Designs. The Available Designs can be concrete objects or abstract concepts. In this study, technology tools were the main Available Designs for the participants. However, technology tools were not limited to emerging technologies. Old technologies were also great Available Designs for the participants to take advantage for their designs and meaning-making. When they brought Available Designs of various modes to the Designing process, they would have dialogues with

their teammates, classmates, online partners and hidden audiences. However, dialogues would not be limited in the Designing process, the participants would have inner dialogues with themselves and expand their dialogues with others in almost all three stages—when they search for Available Designs, move on in the Designing Process, and present their Redesigned. These dialogues would help the participants craft their various I-positions and inspire new ideas. These different dialogues and ideas from individuals could sparkle further discussions, designs, and different I-positions. This environment is expected to help the participants become more aware of and able to create various designs as well as deepen their self-understanding. This is why I believe that the technology-enhanced, multimodal, dialogical learning environment would be helpful and important in the 21st-century learning. In the next chapter, the design for this study will be presented.



**Figure 3 My Rationale for the Technology-Enhanced, Multimodal, Dialogical Learning Environment**

## CHAPTER 3

### METHODOLOGY AND DATA COLLECTION

This study aimed to understand the influence of a technology-enhanced, multimodal, dialogical learning environment on college students' 21<sup>st</sup>-century skills and competence. Specifically, I was interested in a) understanding college students' awareness, skills, and attitudes relating to their digital literacy practices and b) exploring college students' construction of I-positions in a technology-enhanced, multimodal, dialogical learning environment. In this chapter, the overview of the research design, the participants, the research context and data collection methods are presented.

#### **Research Questions**

1. What awareness, skills, and attitudes do 21<sup>st</sup>-century college students exhibit in a technology-enhanced, multimodal, dialogical learning environment?
2. What happens to 21<sup>st</sup>-century college students' construction of various I-positions when they engage in a technology-enhanced, multimodal, dialogical learning environment?

#### **Participants**

The participants in this study were 33 college students enrolled in an introductory course about technology integration in education in a southeastern university in the Spring Semester, 2014. In my class, 18 participants were recruited. The other 15 participants were recruited in another class taught by Maggie. Both Maggie and I were doctoral students in the Learning, Design, and Technology program. The participants majored in different disciplines and were in

different stages in college. Table 1 and Table 2 provide the details of the participants' majors and years in college.

**Table 1**

*The Distribution of the Participants' Stages in College*

<b>Years in College</b>	<b>Numbers of Students</b>
Freshman	8
Sophomore	4
Junior	7
Senior	14

**Table 2**

*The Participants' Majors in College*

<b>Majors</b>	<b>Numbers of Students</b>
Communication Sciences and Disorders	8
Middle School Education	3
Social Studies Education	1
Science Education	1
Public Relations	6
Communications	4
Advertising	2
Journalism	2
Biology Sciences	2
Political Science	1
Sociology	1
Psychology	1
Management Information Systems	1

*Note.* The orange-colored rows were majors listed in the College of Education

**Recruitment Procedure**

As one of the instructors and the major researcher, it was significant for me to describe the recruitment procedure. On the first day of each class, a recruitment flyer was distributed to the students in both classes to help them understand what this study was about. I briefly introduced the purpose of the study, what I would collect from the students in both classes, and answered all the questions the students asked. The recruitment was divided into two stages described in the consent form. If the students agreed to participate in the first stage of the study,

they did not need to do any extra work. What they did in this class would be collected for research purposes. When they signed the consent form, it meant they gave me permission to collect all the assignments, artifacts, and projects they did in this class. For those students who were willing to help me with the second stage data of collection, they needed to check the agreement on the consent form showing that they were willing to do a personal interview with me at the end of the semester. In my class, I made it clear that their participation was voluntary and would not influence their grade. In addition, the participants could withdraw from the research at any time. At the end of the first class, all 19 students in my class agreed to participate in the study. However, one participant withdrew from the class after spring break due to personal health issues. Therefore, I recruited 18 participants in my class. One student in Maggie's class did not want to participate in the study, so I recruited 15 in her class.

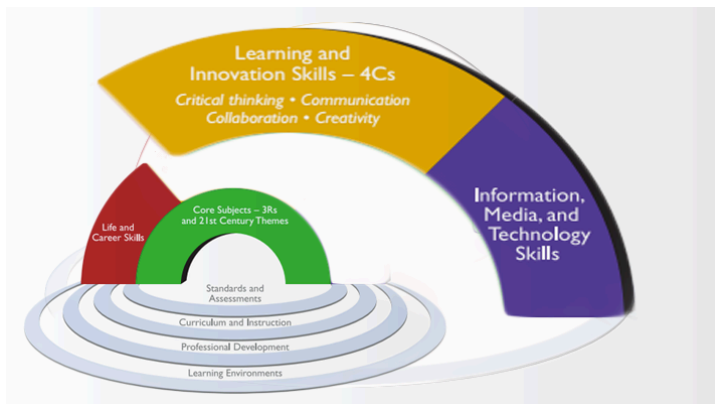
However, not all 33 participants were willing to do the personal interview. Originally, 16 participants in both classes agreed to participate in the interview. Three of them had problems in scheduling for the interview, so I could not interview them. Among the 13 participants who did the personal interview with me, only two of them were Maggie's students. Each participant received a \$15 gift card after we finished the interview.

### **Research Context**

The study was conducted in an introductory course originally designed for pre-service teachers in the College of Education in the university. However, more and more non-education majors enrolled in this class due to the need to learn about using technology in their everyday life. As described in the problem statement in the introduction, researchers were interested in strategies that could narrow the gap between digital natives' out-of-school and in-school literacy. Furthermore, according to the survey results from my previous college students enrolled in this

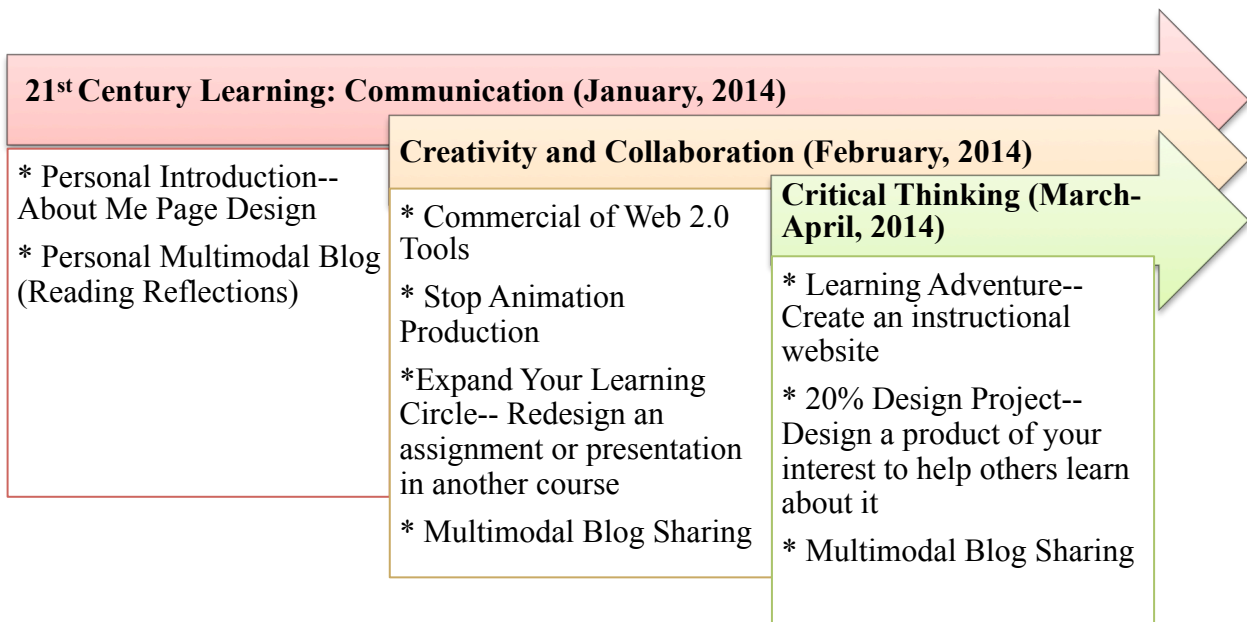
class in the past four semesters, 45 out of 97 students said that they took the course because they wanted to learn more about technology integration for general purposes and learning. This demonstrated that college students have a growing need to learn how to better use technology to help them learn and prepare for their future careers. Therefore, I redesigned the course twice in the previous semesters with the focus shifting from pre-service teachers only to college students in general.

The framework created by the Partnership for 21<sup>st</sup> Century Learning was chosen to be a major reference for the content in my redesign. However, thinking about the scale and the time allotted for this class, I decided to mainly focus on two themes in the framework. Figure 3 shows that the themes of “learning and innovation skills” and “information, media, and technology skills” in the framework were selected to be the main structure for my redesign of the course.



**Figure 4 Two themes in the Partnership for the 21<sup>st</sup> Century Learning Framework were adopted to be the focus of the course redesign**

According to the Partnership for the 21<sup>st</sup>-Century Learning, the learning and innovation skills include creativity, critical thinking, communication, and collaboration (4Cs). These four skills were adopted to be the topics for class discussion. As it shows in figure 4, the instructors introduced a topic to the participants and required the participants accomplished projects related to the topics each month. The participants’ last two projects should reflect what they learned about these four topics; therefore, the last two projects were integrated projects.



**Figure 5 Timeline for this study**

The Partnership for the 21<sup>st</sup>-Century Learning indicated that learners of the 21<sup>st</sup> century should be able to develop their information literacy, media literacy, and information, communications and technology (ICT) literacy. When an individual has developed information literacy, it means he will effectively use and evaluate the information critically. Furthermore, he will be able to apply the information for problem solving. An individual with media literacy will be able to understand that people interpret information from media in different ways and media messages are created to meet certain purposes. In addition, individuals with media literacy should be able to “create media products” (Partnership for the 21<sup>st</sup> Century Learning, 2015b, p.5). When it comes to the ICT literacy, it means the individual will be able to use technology effectively to communicate with others and to use emerging technologies to “access, manage, integrate, evaluate, and create information to successfully function in a knowledge economy” (Partnership for the 21<sup>st</sup> Century Learning, 2015b, p.6). These skills were integrated into the reading materials and projects in this study. Because the two foci from the Partnership for the

21<sup>st</sup> Century Learning align with the objectives in this study and the course, the two themes in the framework were adopted for the design of this study.

Originally, most of the projects and the assignments in both classes were the same. However, due to the inclement weather in Spring Semester, 2014, Maggie replaced some major projects with small-scaled projects, and I changed the components of the projects. Therefore, the participants in the two classes did different projects but had to do the same seven reading reflections related to the 4Cs topics. Table 3 describes the assignments and projects that the participants did in both classes.

**Table 3**

*The Projects and Assignments Accomplished by the Participants in Both Classes*

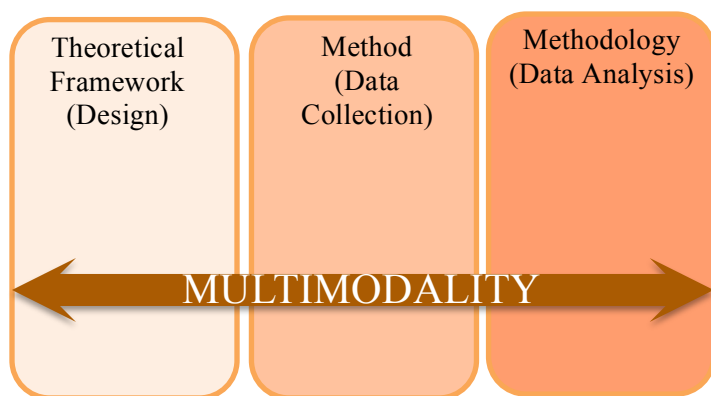
<b>Assignments and Projects</b>	<b>Description</b>	<b>Justine’s Class</b>	<b>Maggie’s Class</b>
Student Information Sheet/ Self-evaluation of software skills	A basic survey to know the participants’ background, previous learning experiences and preferences, ownership of technology devices, use of social media, and skills in using technology.	✓	✗
Crafts	The participants were asked to make artifacts showing their perceptions of technology integration in education	✓ All 18 participants made one in the first class. 12 out of the 18 made another in the individual interview.	✗ None of them made one in the first class. Two out of 15 made one in the individual interview.
About Me Page	The participants created a personal introduction page on about.me to help the instructors and their partners know basic information about them.	✓	✓
Personal Multimodal Blog	The participants created their personal blogs to post reflections on projects and reading materials.	✓	✓

Commercial of Web 2.0 Tool	The participants worked individually or in groups to create a commercial for a Web 2.0 tool of their choice and presented it to the whole class.	✓ (in February)	✓ (in April)
Stop Animation Production	The participants created a stop animation to teach a concept or a process of making something.	✓	✗ (an option for the commercial project)
Expand Your Learning Circle	The participants chose to redesign an assignment or a class presentation from the instructor in another class on campus with the help of technology.	✓	✗
Learning Adventure	The participants created an instructional website about the topic of their interest for a certain group of learners. The content of the website included author introduction, standards, teaching materials, activities/evaluation. Each group needed to do a final presentation in class.	✓	✗
20% Design Project	The participants needed to create a product of their interest that would teach others about it. It could be a prototype of an app, a website, or an instructional package about a certain topic. The participants needed to keep documentation throughout the semester about their progress.	✓	✓
Floor Plan for Your Future Classroom	The participants used a floor planner to design their dream classroom.	✗	✓
Reading #1: Goal of Technology Integrations: Meaningful Learning	This article was chosen to help the participants understand technology integration in education.	✓	✓
Reading #2: Horizon Report 2013 K-12 or Horizon Report in Higher	The report was chosen to help the participants understand the trends in technology integration. They could choose either	✓	✓

Education	version according to their interest and need.		
Reading #3: Is School Enough? (PBS video)	The video was chosen to show practices of technology integration to the participants. This reflection was required to be a video reflection.	✓	✓
Reading #4: Visual Literacy	Several articles and videos were chosen for the participants to review to help them understand how visual literacy works in our daily lives.	✓	✓
Reading #5: Games in 21 <sup>st</sup> -century Teaching and Learning	Several articles and videos were chosen for the participants to see how educators use games to help their learners achieve the learning goals.	✓	✓
Reading #6: Augmented Reality (AR)	Several articles were chosen for the participants to know what AR was and how it could be integrated in learning.	✓ (The participants played an AR game in class)	✓ (The participants did not play the AR game in class)
Reading #7: Massively Open Online Courses (MOOCs)	One article and one podcast were chosen to show the participants why MOOCs were popular in 2012 but dropped fast in 2013. One showed the promising side of MOOCs and the other showed negative critiques in 2013. After learning from both sides, the participants needed to find an article or a podcast talking about MOOCs to show their stance.	✓	✓
End-of-semester self evaluation of skills	The participants self-evaluated their skills in certain software programs	✓	✗
End-of-semester Interview	The participants participated in a photo-elicitation interview with the researcher	11 out of 18 participated	2 out of 15 participated

## Research Design

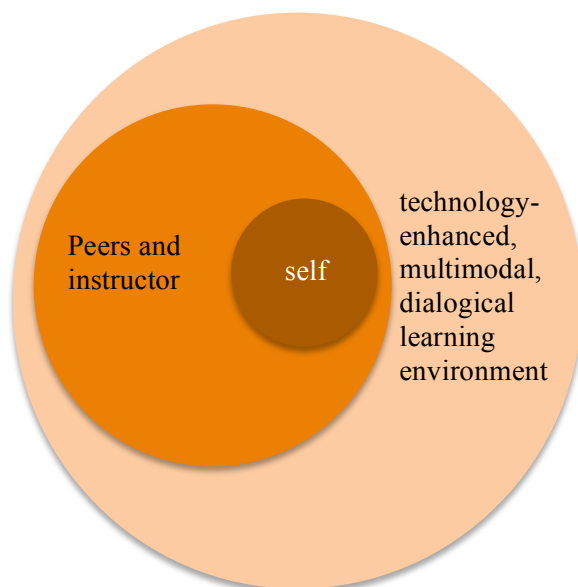
Emerging technologies provide multiple affordances for individuals to present ideas and communicate with others. With the proliferation of technologies, meaning and human knowledge come together in multiple modes within social and cultural contexts. Cope and Kalantzis (2000) explained that the design of meaning is always multimodal and is more than “the sum of linguistic, visual, spatial, gestural and audio modes of meaning” (p.211). The process of combining all the possible modes, and the interpretation and exchanges between various modes, are the foci of multimodal representation. Therefore, multimodality is no longer merely a theoretical framework that supports meaning making and knowledge construction in communication. Multimodality has been adopted as a methodology in order to understand how individuals use resources to make meaning or communicate with others in various contexts and how the multimodal representations show their various selves (Halverson, Bass, & Woods, 2012; Jewitt & Kress, 2003; Kress, 2010). Therefore, I adopted multimodality as the main thread for the research design, data collection, and data analysis. Figure 5 showed how multimodality was used in this study.



**Figure 6** Multimodality was adopted to be the theoretical framework, the method, and the methodology in this study

Maggie and I presented the course content in different modalities. Texts, videos, music, images, podcasts, and artifacts were used to help the participants understand the learning theories

supporting technology integration in education as well as practices conducted in formal and informal learning environments. Various classroom activities and reflective practices were required for the participants to present and visualize their ideas and thoughts in different modes as well. This research design aimed to understand how learning experiences in a technology-enhanced, multimodal, dialogical environment would influence 21<sup>st</sup>-century college students' development in their digital literacy and construction of various I-positions. In this learning environment, the participants were able not only to see Maggie and me modeling multimodality but also to experience multimodality and have dialogues with their peers in both the physical classrooms and the virtual space. Figure 6 shows how I saw my participants position themselves in this study. For every assignment and project, the participants started from themselves. They reflected on their previous experiences and then interacted with their peers and the instructors in class discussion activities, in the designing process of projects, and in personal blogs. All these interactions and reflections happened within the technology-enhanced, multimodal, dialogical learning environment.



**Figure 7** My interpretation of my participants' interaction and positioning in this study

Different technology forms have different affordances (Kress, 2000, 2009). Individuals use emerging technologies to create multimodal compositions for communication (Jewitt, 2009a). Van Leeuwen (2011) pointed out that multimodal compositions have changed the way people read and write. Text-image relations mean more than illustrations or subtitles. Van Leeuwen (2011) called multimodal compositions the new writing. When individuals read the new writing, they analyze the product through composition, framing, color, typography, and background. Communication or literacy practice in individuals' daily lives is more than the performance of individuals' competences. Instead, communication or literacy practice is like a design activity. Therefore, the idea of design proposed by The New London Group (1996) was adopted as another major design principle for this study.

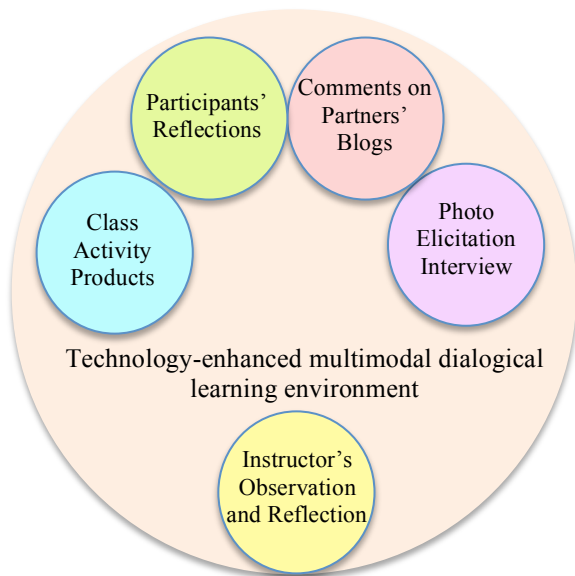
The idea of design was composed of three elements: *Available Designs, Design, and the Redesigned*. As described in the literature review, Available Designs refers to the possible resources for design. When individuals use these Available Designs to construct knowledge, to make meaning, to communicate with others in different semiotic activities, they are in the process of Designing. During the semiotic process of Designing, individuals also construct different selves and negotiate new meanings and thus the Redesigned is made and becomes a new Available Designs. This idea of design is necessary in the meaning-making and knowledge construction.

The projects and reflective practices in this study were designed according to the idea of design presented by the New London Group (1996). The participants were expected to use their out-of-school literacy and their new knowledge and skills in technology integration as the Available Designs to Design new products as the Redesigned to help people learn new concepts and skills or construct new knowledge. Each participant completed multiple individual and

group projects which required them to learn how to use different emerging technologies or old-fashioned technology tools to design instructional materials for learners of different ages and with different needs. In addition, each participant kept a personal blog with their reflections on projects and articles related to technology integration in 21<sup>st</sup>-century classrooms in order to show their change and growth in awareness, skills, and attitudes relating to their digital literacy practices. At the same time, their various I-positions in the technology-enhanced, multimodal, dialogical learning environment were examined and analyzed.

### **Data Collection**

As described in the research design section, multimodality was used for data collection. In this research study, five different types of data were collected to answer the research questions. Given the major focus on the participants' learning experiences in a technology-enhanced, multimodal, dialogical environment, four types of data were designed to be multimodal compositions in order to initiate dialogues and were collected after the grades were submitted to the school. The instructor's observation notes were not shared with the participants for discussion. Figure 7 shows the five types of data. All the data were collected in this technology-enhanced, multimodal, dialogical learning environment. The four types of data on the top of the figure were the participants' products in class or after the semester was over. The last type of data, the instructor's observations and reflections were collected after each class period during the semester. The instructor never shared that data with the participants.



**Figure 8 Five types of data collected in this study**

The first type of data was the participants' products and artifacts made in the class activities. The participants were challenged to visualize their ideas and thoughts by making different artifacts in class. For example, the participants in both classes made posters about the learning theories or teaching strategies in group discussions. This type of data was analyzed to understand the participants' multimodal composition practices.

The second type of data was the participants' reflections on the reading materials about the seven topics of technology integration in education and the class projects in their blogs. For each reflection, the participants needed to write their viewpoints about the topics. There were some guiding questions for each reflection; however, the participants were not required to answer all the guiding questions if they knew what to talk about. Their reflections needed to be multimodal compositions. For each reflection, the participants were required to use at least two modes of their choices to present their ideas. Only one reflection was required to be made as a video. This type of data was designed to understand the participants' learning of the course materials and their feedback to the multimodal composition practices.

The third type of data included the comments the participants made on their partners' blog posts. Each participant in my class was paired up with one participant in Maggie's class. Originally, it was designed for the participants in my class to choose and work with their partners in Maggie's class from the beginning of the semester to spring break. During spring break, the participants in Maggie's class could choose to work with a new partner in my class to the end of the semester. However, the participants in both classes expressed their interest in working with the same partner. Therefore, the participants worked with the same partner throughout the semester. The participants were not very active in commenting on their partner's posts; therefore, the amount of this type of data was very limited. This type of data was designed to delve into the participants' construction of various I-positions.

The first three types of data were course-generated artifacts. They provided the participants with opportunities to practice designing and creating multimodal compositions that carry their ideas and thoughts with the aid of technology tools. In addition, the participants were guided to elaborate and share their feelings and thoughts with others, including their partners, instructors and the unknown audience in the online world. These data were collected in the intersection of multimodality research and the New Literacy Studies. The tradition within the New Literacy Studies is to use the ethnographic perspective to observe a social group's literacy practices. In this study, I agreed with what Pahl and Rowsell suggested in their book. Pahl and Rowsell (2006) claimed that both multimodality and the New Literacy Studies are important. Multimodality helps researchers understand and analyze individuals' practices in meaning making and communication, while the traditional ethnographic perspective in the New Literacy Studies enriches the multimodal data to further delve into the understanding of the a certain social group's literacy practice in communities. In this study, the three types of course-generated

multimodal data helped understand 21<sup>st</sup>-century college students' literacy practices in the local, their physical class, and in the global, their blogs throughout the semester.

The next two types of data were mainly research-generated. The goal of these two types of data was to understand the participants' experiences in being engaged in a technology-enhanced, multimodal, dialogical learning environment through both the participants' and the instructor's lens.

The fourth type of data was the photo-elicitation interview (PEI). John Collier created the term "photo-elicitation" in his paper in 1957 (cited in Harper, 2002). The idea of photo elicitation is to use still-images during the interview in order to stimulate the participant's thoughts, beliefs, values, or even memories of events. What makes photo-elicitation interview a powerful tool is that PEI could possibly evoke more emotional narrations about the interviewee's experiences (Harper, 2002). Photos used in PEI can be used as the interviewee's mental representation about his perceptions of the world (Johnson, 1992) and as a channel to help the interviewee dig deeper in his inner world to develop a new understanding of himself (Taylor, 2002). PEI itself is a multimodal composition in which the participant expresses himself in various modes. Presenting the photo and discussing the image with the interviewer is considered "a 'way of knowing/ seeing' and representation" (Pink, 2004, p.4). The reflexivity between words, images, gestures, and other modes in PEI adds more value to the interview content.

There are two different ways to conduct the PEI. The first way is that the researcher will tell the participant the topic of the interview and ask the participant to take pictures or find images that can represent his perceptions of that interview topic. The other is that the researcher will provide images to ask the participants to interpret the images. In this study, I adopted the

first approach in order to collect authentic perceptions and genuine feedback from the participants.

The last type of data included my reflections and observation journal. The participants might not want to share some of their concerns in their reflections, but they might possibly reveal their feelings in the process of doing the projects or participating in the discussion in class. Some participants shared personal feelings with me that they did not want their peers to know before or after class. Some participants complained when they were doing the projects, especially when they felt frustrated, but these were never mentioned in their personal reflections. I kept my journal about the interactions and observations of the participants' performances and questions for me in class. This type of data helped me understand more about their I-positions and attitudes toward technology integration in education.

### **Data Analysis**

As described in the research design section, multimodality was used as a data analysis methodology in this study. The participants used the artifacts and products in their college learning context in order to communicate with their partners, instructors and unknown readers online and offline. This type of multimodal compositions was considered the social semiotic approach. How individuals use available resources in their meaning-making process to represent or communicate within certain social or cultural context is the focus (Jewitt, 2009a; Kress, 2009; Kress and van Leeuwen, 2001). Therefore, the social semiotic approach to multimodality was adopted for data analysis in this study.

Bezemer and Jewitt (2010) provided step-by-step suggestions to analyze multimodal data from a social semiotic perspective. In their study, multimodal data included video, static texts, the teacher's gestures, his length of a gaze, movements, and even the teacher's interaction with

the textbook. Even though I did not pay much attention to the participants' gestures or movements, I did document their interactions with the reading materials or projects if I noticed them in class.

Another thing that drew my attention in Bezemer and Jewitt's (2010) study was their definition of static texts. When they talked about the static texts, they meant not merely the textbooks or reading materials but also websites. One of the products that the participants in this study made was instructional websites. Therefore, I adopted Bezemer and Jewitt's (2010) approach to analyze the multimodal data collected in this study.

The first step suggested by Bezemer and Jewitt was to collect and log the data. Unlike Bezemer and Jewitt, I did not have videos about the classroom activities. Therefore, the only transcriptions I needed to do were the interviews with the 13 participants and the 27 participants' video reflections (five participants did not do the video reflections and one did it in written form). The participants' reflections were categorized according to the topics. The products and artifacts they created were labeled with keywords. I took thumbnails of their websites and wrote a short summary of the content. After I logged my data this way, I moved to the second step suggested by Bezemer and Jewitt.

The second step was to view the data repeatedly. Bezemer and Jewitt (2010) recommended that researchers view data several times but change the way to view it. One recommendation was to keep asking two questions in order to analyze multimodal data from different perspectives. The first question was "What sense can I make of this text if I can't see the images?" And the second question was "What sense can I make of the text if I change its layout?" (p.186). Another recommendation was to cover one mode and focus on other modes to see whether similar concepts would still be generated. The goal to these changes was to help

researchers “generate criteria for sampling the data, refining and generating new questions, and developing analytical ideas” (Bezemer & Jewitt, 2010, p.186).

The changes I made in step two were to print out the participants’ reflections and websites. Furthermore, I printed the reflections on the topic of visual literacy in black and white instead of in color. The reflection on visual literacy was chosen because that was directly related to the idea of creating visual aids and visual effects, so I wanted to see whether the change in the color tones would make a difference. In addition, I covered the images in the participants’ reflections to see whether the text itself still conveyed the same idea. This step was very helpful for me to see the themes emerging from the data. I think this step helped me triangulate the data as well. While I was reading the data as Bezemer and Jewitt (2010) suggested, I found that this step was not separable from the next step—sampling.

One major challenge for researchers to analyze multimodal data is to analyze their data in detail, so it is significant for researchers to learn how to sample the data. However, it is difficult to sample the data due to the large amount of meanings carried in various modes. Bezemer and Jewitt (2010) indicated that a general principle in sampling the data was to always keep your research questions in mind and select “one that is intimately guided by the research question” (p.186). In this sampling step, researchers tend to easily focus on what stands out and miss meanings carried by other modes that answer researchers’ inquiries. Therefore, it is essential for researchers doing multimodal research to go back to “the whole data corpus to test our analysis of the selected texts against it” (Bezemer & Jewitt, 2010, p.186). While doing these two steps, I highlighted the statements and keywords responding to the research questions in all the reflections, the transcriptions, my observation and reflection notes and the summaries I made of

the participants' products. In addition, I categorized the participants' artifacts according to the keywords in the research questions.

The last step in analyzing multimodal data suggested by Bezemer and Jewitt (2010) was to transcribe and analyze data. According to Bezemer and Jewitt, transcription of multimodal data means more than transcribing speech into words. When researchers transcribe their multimodal data that is not static text, they need to make descriptive notes of different modes. If the data is in static texts like books or websites, researchers can analyze it by changing the layout or format. This step is very similar to the two questions they suggest researchers keep in mind in step two. I have already changed the data from the screen-based texts and images into paper-based texts and images in step two. The printout of the participants' reflections and websites not only changed the format but also the layout. This change let me see that some of the images in the participants' reflections did not align with their supporting texts. As a result, the misalignment made the participants' opinions and argument weaker, and for the reflection on visual literacy, some of the images presented in black and white gave me a twist of interpretation. Following Bezemer and Jewitt's suggestion, I frequently went back to the participants' original blogs and websites to test my interpretations and compared the themes I generated from the reviewing of data.

In addition to the analysis approach recommended by Bezemer and Jewitt, I used the New London Group's idea of design to examine the participants' projects and artifacts to see how they applied the Available Designs in the Designing process to create the Redesigned. By examining the application of the idea of design, I was able to delve into the participants' changes in their awareness, skills, and attitudes toward using technology in their learning and preparation

for their future as well as their I-positions in this technology-enhanced, multimodal, dialogical learning environment.

### **Limitation of the Study**

As in most qualitative research, the main limitation of this study was the relationship between the researcher and the participants. The 18 participants spent the whole semester with me. We met twice a week and each session was 75 minutes. During their project time, I walked and stayed with the groups to discuss their ideas with them. Some of the participants scheduled individual meetings with me to talk about their personal concerns about their projects or assignments. Some of the participants considered me as one of their mentors who could give them advice on their campus life. The line between the participants and me as the researcher was really blurry. In the very beginning, I was very concerned about this. However, when the participants kept talking with me, I felt that I put the researcher aside. Most of the time, I played the role of their instructor who wanted them to make good projects and their mentor who wanted to help them grow stronger. This change of mindset helped the participants and me during the individual interviews. After the interviews, several of the 11 participants in my class told me that they did not think of me as a researcher interviewing them. What they saw was a teacher who really wanted to know how she could help them learn better not merely in this course but also in other courses on this university campus. One girl, Amy, told me that she started to feel this way in the middle of the semester. That was one of the reasons she wanted to re-do her blog. Even though she was a little bit afraid of asking me for this favor, she did ask. Because of their honest conversations with me, I was much more confident that what the participants told me in the interview was their genuine feedback, since the gap between the researcher/ instructor and the participants was narrower.

Another limitation of this study was the completeness of the data. Several participants in both classes missed several reflections. In addition, the participants in both classes did slightly different projects. Due to the inclement weather, Maggie missed six class periods and I missed five class periods. Therefore, we needed to change some of the projects and the rubric for the projects to decrease the workload of the participants within limited time. As a result, the data could not be as completed as it was originally designed. However, the data itself still was very meaningful and helped me see the answers to the research questions.

### **Summary**

In this chapter, the major design principles I used for the research design were discussed. How I used multimodality as the central thread for the design, data collection and data analysis were also described in detail. In the next chapter, the findings from the data are presented.

## CHAPTER 4

### RESULTS

The study aimed to understand the influence of a technology-enhanced, multimodal, dialogical learning environment on 21<sup>st</sup>-century college students' awareness, skills, and attitudes relating to their digital literacy practices, as well as their different I-positions in these practices. Data included the participants' various multimodal compositions from different projects and reflections, individual interviews, and the instructor's observation notes. As Bezemer and Jewitt (2010) suggested, when researchers are analyzing their multimodal data, they need to keep the research questions in mind to help sample and label the themes. Therefore, the keywords in the research questions—awareness, skills, attitudes, and I-positions—were used as the main themes of the data. All the sub-themes were identified across the different modes in the data.

In this chapter, seven participants' data were presented in the following way: in the first part of this chapter, the participants' awareness, skills, and attitudes relating to their digital literacy practices will be presented. For each sub-theme, a short summary will be followed by the seven participants' multimodal compositions. Due to the abstractness of the concept of I-positions, most data illustrating the participants' I-positions were found in the individual interviews in the form of text and will be presented in the second half of the chapter.

#### **The Participants' Awareness of Digital Literacy Practices**

In this section, the data demonstrated the growth of the participants' awareness of their digital literacy practices when they were exposed to the technology-enhanced, multimodal, dialogical learning environment. From the data presented below, it was salient that the

participants' awareness of the use of emerging technologies to represent their ideas shifted from concrete objects to abstract idea representations. At the same time, their awareness of the ideas and issues related to media literacy and information literacy broadened. For example, one sub-theme that emerged from the participants' data was the issue of copyright that is an important topic in media and information literacy education. Therefore, the data related to the participants' awareness is presented chronologically to show their growth and changes. The first sub-theme was the participants' perceptions of technology use in education.

### **Technology Use in Education**

First of all, the seven participants demonstrated awareness of the hardware they used in their current and previous learning experiences. The data showed that they were aware of their high reliance on the devices to do schoolwork. Later on, the seven participants also described the software programs they used for schoolwork; these were mostly basic word-processing and presentation tools. Even though most of the participants embraced the idea of using technology for personal learning, they were not aware of the great opportunities and potential of applications or other alternative software programs for educational purposes. For example, Shelby believed that technology was powerful, but she did not give any examples of her use of technology to improve her learning. In the very beginning of the study, the participants' reflections on technology use in education showed that their awareness of their digital literacy practices was quite limited to hardware and basic software programs.

**The ownership of technology devices.** When the participants talked about technology use in education, the most common description was the ownership of technology devices. The participants indicated that computers have already become an essential part of their lives. They could not stay in college without having a laptop. From the student information survey, it was

obvious that all the six participants in my class had more than one device that they could use to search for information online, read or write documents, or take pictures. Even though owning multiple devices did not make these participants more digitally literate, the participants still perceived that the ownership of technology devices equaled to their ability of using emerging technologies to accomplish academic work.

When the participants were asked to make an artifact to show their perception of using technology for personal learning, Shelby made a person holding an iPad. When Shelby was asked about the similar sizes of the person and the iPad, she laughed and said it might be because she relied on her iPad so much. She felt that the iPad was very powerful and could help her achieve many goals in her life, so she made it big.

The emphasis on the hardware of technology tools was a noticeable theme not only in the class discussion but also in the participants' reflections. In the first reflection on personal learning with the aid of technology, all the participants mentioned their personal devices and described what they did with the devices. A picture of a personal laptop or of all the devices the participants had was commonly seen in the participants' reflections. In class, Shelby made the artifact of herself holding an iPad, and in her reflection on technology use in education, she described herself feeling lost without her iPhone, iPad, or laptop, and she included a picture of all three devices. Julianne took a picture of her laptop to explain that she used it to accomplish all the tasks for classes.

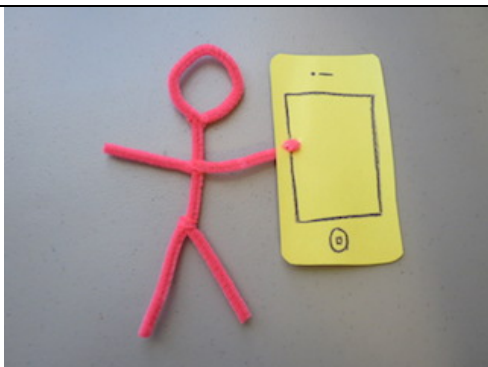
A few participants gave examples of what their teachers in K-12 education had used to help them learn. For example, Keira made the artifact of a teacher and a student using a Smart Board to solve a math problem. In addition, it was common for her teachers and classmates to use tablets in class because they were in the Bring Your Own Technology (BYOT) program in

high school. Keira noted that they did a lot of activities with the technology devices they had, but she was also aware of the distractions they provided when the activities were boring and repetitious.

**Table 4**

***Sub-Theme: “The Ownership of Technology Devices” in Different Modes***

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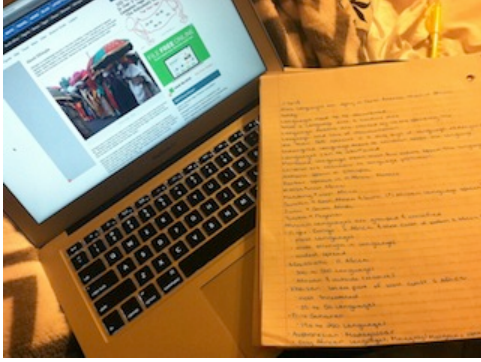
Shelby and her iPad. “ While technology may play a great role in learning and the lives of students today, I only used my desktop to download music and play solitaire. Today, I feel lost without my iPhone, iPad or laptop especially when I need to check ELC before a class to ensure I haven’t missed an assignment that need to be completed.” (Shelby)

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Keira’s artifact showed the use of interactive whiteboard in high school. “Throughout my personal learning so far, I have discovered that the whole idea of school would be much more difficult without technology. Technology is what drives our learning processes. For example, my teachers use smartboard and we all have laptops.” (Keira)

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Julianne's picture of her laptop.

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**Software programs used in personal learning.** Several themes generated from the data showed the participants' awareness and perceptions of using software programs in their learning.

***Online searching: Evaluation or not?*** The most common use of educational technology was to search for information online. The participants heavily relied on the search engines to obtain information related to the courses they were taking or information they needed for daily life. In the personal reflection on technology use, a few participants indicated that Google was the first thing that came to their mind when they needed to find answers for problems in course assignments or in daily lives. Most of the participants' reliance on Google did not decrease throughout the semester; nevertheless, they did show their increasing awareness of evaluating the information they found. For example, in her first reflection, Coco said that "I believe ninety percent of what we actually learn comes from google. We google the answers to our homework questions, we google for any fact we want to know, we can even google google." However, she told me that she has learned to learn from her peers rather than to be completely dependent on search engines.

***Social media. I am good at it, but professors are like dinosaurs.*** Unlike the low awareness of the potential of other software programs, the participants were highly aware of the potential of using various social media to help them learn even in the very beginning of the

semester. They described the ways they used social media in group discussion and collaboration. The participants expressed that the use of social media in class was what they expected to see when it came to technology integration in education. They believed that social media would be very beneficial for educational use. Therefore, instead of thinking about how they used it, six out of seven participants questioned why there were not many educators using social media in their teaching, especially in higher education. The only participant, Jack, drew a picture to express his perception and doubt in the potential and problems related to the overuse of technology, particularly all kinds of social media.

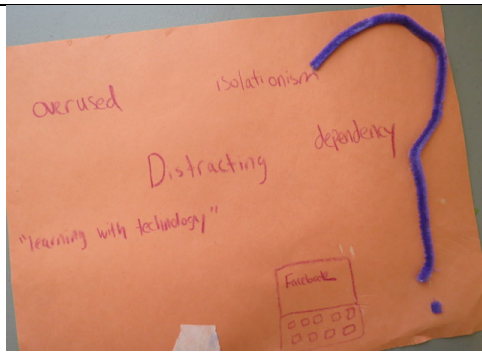
In the very beginning of the semester, most of the participants just expressed that they were not satisfied that professors either did not use social media or banned social media. They did not give any suggestions about how professors could use social media for their class. However, due to the familiarity they had with social media, the participants started to work on integrating social media into their projects. One participant used the idea of social media for their Expand Your Learning Circle Project to redesign the projects in another class. Two participants integrated the idea of using social media into their Learning Adventure Project. This phenomenon showed that the participants were highly aware of their out-of-school digital literacy practices and managed to bring it into their formal learning.

For example, Roxanne was aware of the importance of visual literacy before coming to this class. She described herself a painter in her About Me page. Drawing had always been a way for her to express her feelings and thoughts. She noticed that visual artifacts were widely used in social media; therefore, she had a photo blog to help her post pictures about her ideas before she enrolled in this class. However, she admitted that she was not aware of the power of social network until she heard her peers talking about the need for professors to use social media.

Therefore, she tried to combine these two things together for educational purposes. In Roxanne's redesign of course assignments, she advised that the instructor could use Tumblr, an interactive micro-blogging site, to ask students to represent their reflections on women's roles in America in the '50s. Instead of writing a paper, Roxanne believed that this would be more meaningful for students to deeply think about what they learned about life in the '50s.

**Table 5**

***Sub-Theme: "Social Media. I am Good at it, but Professors are Like Dinosaurs." in Different Modes***



Jack's artifact showing his perception and doubt in the potential and problems resulted from the overuse of technology.



Amy made artifacts about social media to show their expectations on professors to use more social media in class, but she did not give suggestions about how to integrate social media in class.

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Roxanne's use of social media in her Expand Your Learning Circle Project.

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**Available programs on my laptop: Do I really know how to use them?** Another theme showed the participants' use of Microsoft Office® programs to write papers and do class presentations. However, most of the participants expressed that they never really knew they could use the basic tools to make their learning more effective and meaningful. For example, when we talked about possibilities of using Word® to create tri-fold brochures or posters, interactive PowerPoint® presentations or PowerPoint® games in class, the participants demonstrated a lack of knowledge in these features in Microsoft Office.

Beyond the Microsoft Office® programs, some participants were not aware of the available programs installed on their laptops. Even though some participants knew those programs were available, they had never tried to use them. This phenomenon showed that the participants were not aware of the potential of using available software programs for educational purposes.

**Online learning management system: Lifesaver?** Another sub-theme was the increasing use of online textbooks and the web-based learning management system. When the participants used the system, they took online quizzes, joined online discussion, downloaded course materials, and checked course requirements and grades. Shelby said it was helpful that they could check everything related to the courses via one site on any device and did not need to bring a lot of papers and binders. This theme implied that the delivery of course materials transferred

from traditional paper-based format to web-based format was common in 21<sup>st</sup>-century learning and teaching. Apparently, the participants embraced this change.

### **The Participants' Awareness of Visual Literacy.**

Visual literacy was a major digital practice that the participants were aware of due to the focus on multimodality in this learning environment. Many participants described themselves as visual learners when they reflected on their previous learning experiences. For example, Coco thought that she would remember the information more easily if she could recall the image associated with the topic.

Several participants said it really encouraged them to be more creative. In their first project of creating a commercial for a technology software program or an application, Shelby's group chose to make a commercial for Prezi. They wanted to promote the visually appealing feature of Prezi to their classmates, so they needed to "tap into their creative side" (quoted from one of the group member's reflection). Their final product was a movie trailer for Prezi. To complete this project, the three participants worked on the storyboard first and then recorded the scenarios. They even asked a male classmate to do the voiceover for them. Their final product was very successful and drew their classmates' attention. The comments they received from their peers were mostly about their creativity in creating a story of how the visually appealing feature of Prezi could change a college student's boring life to an exciting one.

Many of the participants' Expand Your Learning Circle Project final products demonstrated their increasing awareness of visual literacy when they added visual aids in the class presentations or redesigned the assignments from papers to posters and videos. Several participants described their dissatisfaction about the dullness of their instructors' PowerPoint® slides. In one of Coco's classes on campus, the instructor used "standard white page with grey

accent pages” (quoted from Coco’s reflection on Expand Your Learning Circle Project) in the PowerPoint® presentation throughout the semester. In addition, Coco felt confused and demotivated in class when the instructor essentially recited the slides in which the content was directly copied from the open educational resource the instructor found. Coco appreciated that she did not need to buy an expensive statistic textbook like her peers, but she could not understand the differences between learning from a free online textbook or having a professor simply recite the same content in PowerPoint® presentations.

Coco was not the only one giving examples of instructors’ poorly designed PowerPoint® presentations. Several participants chose to redesign the PowerPoint® slides from their instructors to help themselves learn better and remember the content. Their new designs were truly more visually appealing and demonstrated some effective design techniques. Most importantly, the participants realized that when they tried to redesign the presentation from descriptive texts to a multimodal composition, they actually learned the content and could introduce the concept to others without reading the texts.

Posting images in personal blogs to support their argument was challenging to the participants, especially when they tried to fulfill the requirement of using at least two different modes. The practice of creating a multimodal blog helped the participants become aware of the importance of visual literacy. For example, Coco said that

“Our learning is continually evolving into a ‘new language’. I definitely think keeping this blog up with visual presentations is challenging. It’s a lot of work and extra time spent. At times, I think it is unnecessary, but then when I go to someone else’s blog and I see how great it looks how quickly I focus and retain the information just by the sheer look of it, I know it is beneficial.”

However, certain image choices could cause confusion. For example, Keira tried to use a picture of ram to explain her development in visual literacy, but that images left her partner confused about its relationship to her perception of visual literacy.

**Table 6**

*Sub-Theme: “The Participants’ Awareness of Visual Literacy” in Different Modes*

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Keira used the following words to go along with her image, but since her words did not tightly connect with the image of a ram, her partner became confused. “In keeping with this blog, I have found it challenging to incorporate a visual image. However, I enjoy this challenge. It has definitely force me to change the way I ‘see’ words and concepts and has required me to look at information in a new way.”

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Due to the continuous exposure in the multimodal learning environment created by both instructors and their classmates, most participants were aware of the importance to visualize their ideas. The participants in the interviews expressed that it helped them realize how powerful visual aids could be just by seeing Maggie and me use different kinds of visual aids to talk about the foundations in education. It made the learning theories or concepts easy to remember, especially for those who were not education majors. Furthermore, they said that the way Maggie and I used multiple visual aids and activities made them feel more engaged. Now that they had an increased awareness of visual aids, they felt that it was really bad that many educators were not aware of the potential that visual aids could bring to the classroom.

## Copyright? © or ©.

When we talked about copyright issues in class, the participants were all aware of its importance. However, their behavior in searching for information online showed evidence of their complete ignorance of copyright issues, especially when searching for images online. All seven participants did not know that they needed to put references in their blog to give the photographers credit. Before the class discussion, none of the participants knew the purpose of Creative Commons; basically, only one out of seven had heard about it. Amy and Julianne thought the idea of creating their own images was challenging and ridiculous. Amy said that she has been copying and pasting images from Google for years without citing them. In a society where images and videos can be so easily created and shared, the participants apparently had no idea how to protect themselves for their own copyright and how to protect themselves from not violating the copyright law. However, after creating their stop animation videos, the participants realized the significance of copyright issues.

### Table 7

#### *Sub-Theme: “Copyright? © or ©” in Different Modes*

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“You showed us how to search images that was free and legal to use. I never knew about the search tool in Google. Oh, and also you asked us to create images for our blogs...that was challenging in the very beginning. But later on, I actually found it was easier and safer than copy and paste the images from the Internet, because it won’t be against the copyright law...so I do feel that I am better at searching for information online...or I should say at least I can protect myself more. And that is why I designed the photo literacy project for the 20% Design Project.” Julianne’s statement showed that she felt more comfortable in using images found online and showed that her information literacy developed during the class.

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“You always talk about copyright issues, since the first class. I thought you were mean and crazy though [laugh]...I have copied and pasted the images I found online in my assignments a thousand times and nothing happened. But then you made us make the slow animation video and you are exactly right! A good video deserved to be protected! I don’t want someone to just use my slowmotion to teach others without getting my permission! I spent so much time and energy on it, if someone just took it, I would definitely sue her! [laugh]. After making my slow animation, I really become very careful when I try to use images I found online...I don’t want anyone to sue me.” Amy talked about copyright issues in the interview. She either was not aware of them or did not take a serious attitude toward them before the stop animation project.

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After that, she was highly aware of copyright issues and totally changed her attitude.

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In short, the participants were not strongly aware of their digital literacy practices for educational purposes. Instead, their overemphasis on the hardware and basic features of some popular software programs limited the potential of using emerging technologies to help them create significant learning experiences. The technology-enhanced, multimodal, dialogical learning environment helped them see more possibilities and the critical issues of using technologies in education and thus, they gained more awareness. With the increasing awareness of the significance of their digital literacy practices, the participants also needed to examine and strengthen their skills. The next section will talk about the participants' skills in digital literacy practice.

### **The Participants' Skills in Digital Literacy Practices**

From the participants' descriptions of their use of technology in their previous learning experiences, it could be inferred that the participants were capable of understanding texts presented in different modes when searching for information online. It was difficult to know whether the participants could evaluate and judge the information from their personal descriptions, but their writing suggested that the participants had limited ways to express their ideas and thoughts with the aid of emerging technologies in their learning. Word-processing software, including Microsoft Word®, Microsoft PowerPoint®, and Pages in the Macintosh system were the most popular tools among the participants when being asked to write papers and do presentations.

The seven participants did a self-evaluation of their skills in various technology tools, and I categorized the result into three major sub-themes: familiarity with Microsoft Office® programs, familiarity with visual aid creation and editing, and familiarity with Internet use. The

last sub-theme in this category emerged from the interview. The participants addressed how their skills in organizing and presenting their ideas to others were greatly improved in the multimodal, dialogical learning environment. They learned to utilize different modes to make meanings for different audiences. When they were organizing their ideas, they would think more critically and deeply, because they knew there would be an audience in addition to their instructors and partners. This sub-theme implies the participants' various I-positions in the digital literacy practices that will be discussed in the second half of this chapter.

### **Microsoft PowerPoint®: A Piece of Cake?**

The first sub-theme was about their skills in Microsoft PowerPoint®. If the participants used a Macintosh system, the program could refer to Keynote. Most participants were very confident and comfortable with using Microsoft Office® programs because they had used the software since childhood. However, the participants surprisingly evaluated themselves as not very proficient in using PowerPoint®. None of the participants thought they were good or very good at the most common presentation tool. When they were asked about the reason, some participants said that they were not confident about making a good presentation that could draw audiences' attention. The participants were aware of the possibility of creating good PowerPoint® presentations; hence, they were not satisfied by merely being good at using the basic features in PowerPoint®. In addition, they had seen many PowerPoint® presentations; their standards of good presentations might be higher.

Even though PowerPoint® was not a tool introduced and taught in this class, the participants still frequently used it in a few projects. In the Expand Your Learning Circle Project, several participants chose to redesign the poorly designed PowerPoint® slides made by their instructors. With their increasing awareness of the potential of visual aids, the participants

were willing to try different features in PowerPoint®. The participants' awareness was the best motive for them to improve their technological skills. For example, Julianne asked me to teach her how to make an interactive PowerPoint® presentation. She critiqued the PowerPoint® presentation created by the instructor in another class. Julianne thought the design in black and white with numerous bulletin points was really boring. Therefore, she redesigned it into an interactive presentation with questions and answers with some visual aids. The following was her critique and rationale for her redesign.

**Table 8**

***One Participant's Example of the PowerPoint® Presentation Redesign for the Expand Your Learning Circle Project***

Julianne's redesign of the instructor's PowerPoint® presentation in her communication class. Original slides:



Julianne's critique:

"These slides had fantastic information, but the format made it difficult to really get a grasp on it. There were no graphics, making it difficult to get a thorough understanding of the material. It was also not visually appealing; the presentation was in black and white. Finally, there were no other resources or methods of absorbing the same information. I would have liked to see more

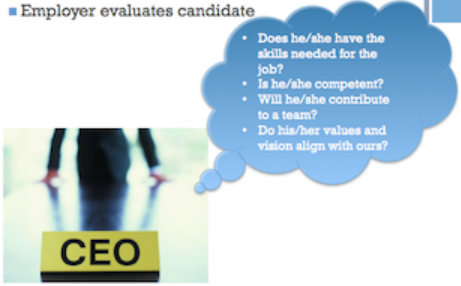
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graphics as well as videos and other resources to use for the job search.”

Julianne’s redesign:

+ What are the goals?


- Employer evaluates candidate



+ Pop Quiz (Answers)

- Communicate your skills? ✓
- Use control statements to your advantage? ✓
- Show up more than 20 minutes early? ✗
- Help employers know why they should hire you? ✓
- Talk negatively about previous employers/teams? ✗
- Ask about benefits or salary during the interview? ✗
- Follow up after the interview? ✓
- Give a limp handshake? ✗

+ How can I make a good first impression?



Here rationale for saying her redesign was better:

“I changed this presentation to include: more graphics on each slide, to make the presentation more engaging. It also includes more interactive content. I added a pop quiz to cover material, so that the class can guess and answer questions before they are told the right answer. There is now a video in slide 3 so that there are different mediums of learning incorporated in the presentation. Finally, it now has greater visual appeal; the presentation has more color, images, and much less text than before.”

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### After Saying “Cheese”, What Should I Do?

The second sub-theme in the participants’ skills was about creating and editing digital visual artifacts. Sharing images with others was a main feature in some popular social media sites. Many emerging technologies allow individuals to edit images and create short video clips. Digital editing and sharing of images and videos were common for personal use; however, most of the participants said these were not yet employed as common strategies in their learning. Some participants in this study did use social media for their learning before taking this course. For example, Keira had a board on Pinterest to collect the images related to her major, speech

pathology. Jack tried BuzzFeed once and wrote a humorous reflection on one of the articles he read for a class. Although being engaged in popular social media sites did not mean that users needed to be able to edit still images or videos, such engagement showed that visual works played an important role in expressing personal thoughts, showing personal interests, and communicating with others. As discussed in the previous section, the participants were more aware of visual literacy practices, but they needed to sharpen their skills in editing visual aids for educational purposes.

The participants did not think they were good at editing digital images or videos. They knew of some of the famous software programs to edit images or videos. For example, most of them heard about Photoshop®, iMovie, Lightroom® or the application Vine, but only one of the seven participants learned how to use Photoshop® and had opportunities to practice it in high school. Most of the participants did not have any experience in using image or video editing tools. Learning more about the techniques of image and video editing was one of the goals that most participants had for this class. From their self-evaluations, it can be said that the participants were not confident in editing images and videos before the class. It implied that the participants played mostly the role of consumers but not producers in their digital practices of image and video editing.

Maggie and I introduced several movie-making software programs and applications for the participants to use to accomplish the tasks for their projects. Jing, iMovie (both the laptop version and the application for iPad), Windows MovieMaker®, YouTube, Preview in Macintosh system, Vine, and Cameo were introduced to the participants. Several participants described their experiences in learning these tools and their growth in editing images and videos in their

reflections and the interviews. They did not know some of these tools were available. For example, Coco did not know that YouTube could be a recording tool. She said

“I did not know I could record a video on YouTube. Seriously, who will think of YouTube as a recording tool? We all use it every day to watch tons of videos, but I guess we just never explore what we have.”

Most participants realized that creating a video was not as difficult as they thought, even though a few of them described their frustration with the tools they chose.

For example, Keira had used iMovie before and helped her classmates with the video projects. She tried to use Jing for her Stop Animation Project, but she was frustrated with several features of Jing. However, these experiences helped her evaluate different video editing tools for future use. Keira said that she still learned a lot even though it was a very frustrating experience. Making the commercial about a GIF creator tool greatly aided her in making the slow animation project later that semester and it helped her understand more about animation. She believed that all the skills in creating and editing videos with different tools would help her a lot in her future career as a speech pathologist, because she said she needed to design and create different videos for her students or patients due to their different needs. She described her experiences in the following statement:

“I have used iMovie in previous classes but this is the first time I used any sort of video screenshot like Jing. I was excited when researching and playing with my tool.

However, the frustration started when making the PowerPoint. I had to create over 100 slides to create the effect that I had. It was definitely a very tedious process. Jing was also frustrating because it took many times to film and get the timing correct. It was also frustrating that you can't edit the Jing video after you record.”

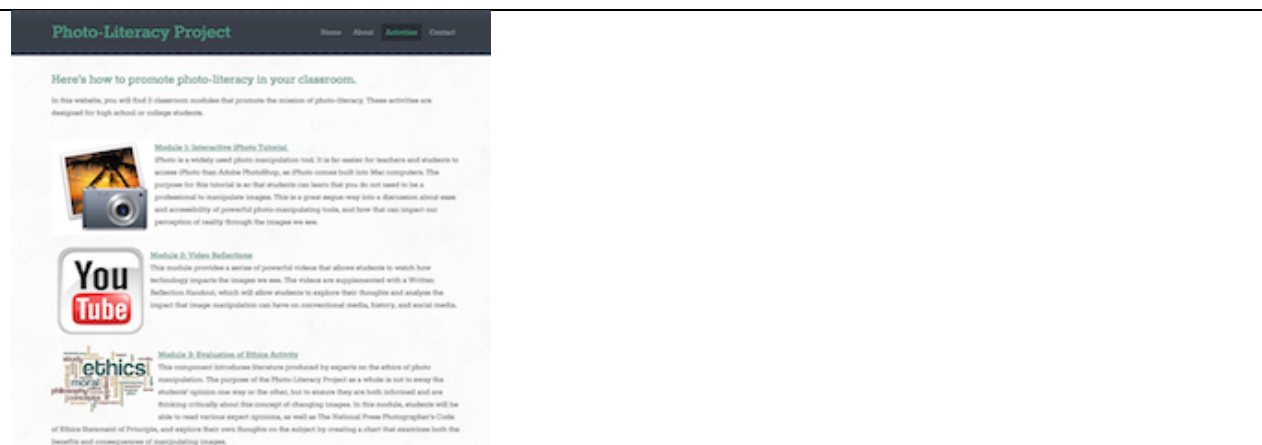
Creating videos also gave the participants opportunities to be more creative about presenting their ideas. After they learned the basic functions of editing images or videos, the participants realized that what challenged them the most was actually the content of the video, especially when they wanted to be creative in making a video that was informative and eye-catching at the same time. For group projects, some participants also described how collaboration helped them learn to use the tools or to be more creative. Amy told me that being more creative was her take-away from video projects in this class. She said that “I think making these videos really helps me to be more creative, because you just don’t want to show a video and then everyone is like...oh, that cliché again.”

The participants mostly shared positive feedback regarding their experiences in learning to create videos with different tools. Even though some of them did have some frustration, they were still content with not merely the skills they gained in creating videos but also in their capability to think creatively. The participants demonstrated a more confident and comfortable attitude toward creating and editing images and videos in the future.

Once they gained the skills to use technology tools and became aware of the importance of using technology to represent what they have learned, they started to apply the skills as much as possible. After doing the YouTube reflection, several participants used the strategy of recording their author introduction video in their 20% Design Project. After editing images for their About Me page, several participants edited images for their Expanding Your Learning Circle Project or designed an image-editing assignment for the learners in their 20% Design Project. Table 9 showed Julianne’s example of her awareness and skills in digital image and video editing after she learned the skills. She was able to create a website to talk about image and video editing to help teenagers develop visual literacy.

**Table 9**

***The Participants' Examples of Video and Image Creation***



Julianne designed a website about photo literacy for her 20% Design Project. She said the idea was developed after she read the articles about visual literacy. She realized the importance of helping others cultivate their visual literacy since we were in a society where signs were almost as important as words. She was sad that visual literacy was a missing piece in K-12 education. Therefore, she wanted to create a site to teach high school students develop visual literacy. On that website, she focused on her learners' skills in image manipulation as well as skills in critically evaluating and interpreting information carried by images.

Many participants indicated that they learned a lot by presenting their ideas with the aid of visual aids in this multimodal learning environment, especially in the Expand Your Learning Circle Project. From my observation, in addition to learning through this redesign project, some participants definitely showed improvement in their choices of images presented in their blogs. Some participants still used simple images to present their ideas throughout the semester.

Shelby was an interesting case. She was a senior majoring in communications. In her personal reflection on learning with technology, she strongly asserted that she was not technologically savvy and did not like teaching. However, she had the most technology devices, including one laptop and two handheld devices, and she would join Teach for America after her graduation. Needless to say, I saw a lot of contradictions in Shelby, and this included her views on her visual literacy skills. She questioned me a lot about her choices of images in class. She said it was extremely difficult for her to draw or take pictures to show what she wanted to say;

therefore, she did not post images in some of her reflections. However, her images in her reflection on visual literacy demonstrated contradictory views again. In her reflection on visual literacy, she described how she saw visual literacy in today's society and took two pictures to support her viewpoints. The two images perfectly explained what she believed and they showed that she truly had the visual literacy to help her audience visualize her thoughts; sadly, she was not aware of her skills.

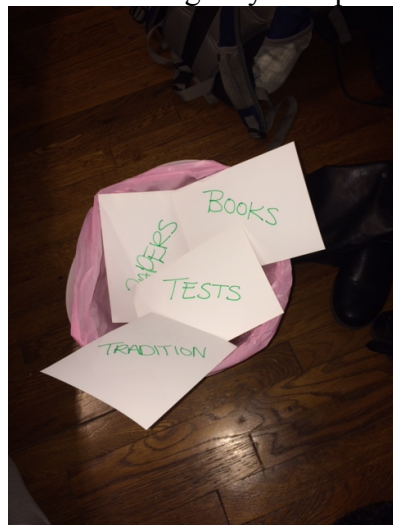
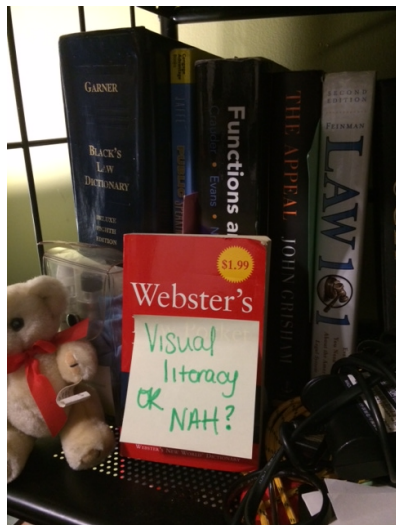
**Table 10**

***The Participants' Examples Showing Their Visual Literacy Skills***

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Shelby's reflection on visual literacy

“Although I may be considered a ‘21<sup>st</sup> century learner’ I could not see myself helping others to develop visual literacy and do not see how it happens in our daily lives. I understand the integration of technology into the classroom but visual literacy is a concept that I am having an extremely hard time grasping. The two visual representations that I included for the purpose of this post were both pictures because I found this assignment particularly difficult. As stated before, I do not have a particular interest in the advancement of technology also making this assignment difficult. I posted a sticky note on Webster's dictionary with that statement because the ‘or nah’ (or not) phrase that has become popular amongst African American youth, and although I believe books may be replaced soon the acceptance of visual literacy has not come up yet. Additionally, my other picture has certain words on paper (tradition, books, paper, tests) in a trash can because these old forms of learning may be replaced by things like visual learning.”



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**I Don't Need to Learn a Different Programming Language to Create a Website? Good To Know!**

The last sub-theme in the self-evaluation was about the participants' skills in Internet use. From their reflection on personal use of technology in education, searching for information online was the main digital literacy practice they were involved with on a daily basis. Therefore, most of the participants were satisfied with their online searching skills. Keira, was willing to share with the whole class why she evaluated herself being poor at this skill. Keira said that she felt overwhelmed sometimes due to a huge amount of information. She felt that she could not make that right judgment about the things she read. Sometimes she even lost focus on what she wanted to know. Therefore, she could not feel certain that what she found online was actually helpful. Keira's self-evaluation showed that her information literacy was not strong and this was a factor in her daily digital literacy practices.

However, being exposed to the technology-enhanced, multimodal, dialogical learning environment helped Keira develop stronger skills in searching for information online. Keira indicated that one approach, discussion with her partners in the group projects and in her blog, helped her make judgments about the information that she found online for the class projects or the reading materials. For example, Keira's blog partner sometimes challenged her with different opinions about her thoughts, even though he was not active in posting and commenting on her reflections.

The class discussion activities also challenged Keira to think deeper about the reading materials. She gave an example in the in-class discussion activity about a video clip published by PBS. The video showed five innovative projects conducted in five different schools. Each participant recorded a personal reflection on this video and published on YouTube. They posted the video link in their blogs before coming to class. In class, we did a silent paper discussion. First of all, the participants needed to choose the most impressive project shown in the video and

formed groups with other participants who chose the same project. In that group, each of them had a piece of paper with a guiding question related to that project. They needed to answer the question and then passed it on to the next participant. Next, they made comments on the previous people's comments until all of the group members made comments on their original sheet. Then, as a group, they needed to summarize what they wrote on the silent discussion paper. Keira said the diversities in individuals' opinions about the same project in that silent discussion really helped her see the importance of always giving a second thought about what she found online. She said that "we responded to different people's response differently. In the silent discussion, you can't escape by only saying I agree. You actually need to write more. It is great for me to think critically."

Another item in this sub-theme was about the participants' skills in creating webpages or websites. Unlike the previous question in this category, most participants were not good at this in the very beginning of the semester. Learning how to create websites and webpages was another goal that a few participants wanted to achieve in this class. When we discussed this topic, several participants expressed their fear about learning a different *language* to create a website.

All the participants needed to create a blog for their reflections on the reading materials and the course projects in this research project. Wordpress™ and Blogger™ were introduced to all of them as blog host sites, but both could be used to create a simple website as well. Another web-hosting service introduced to the participants for the Learning Adventure Project was Weebly™. Several participants were not willing to create an account on Weebly™, so they chose to use Google sites to create their Learning Adventure websites. All four sites were easy to use, especially Weebly™. Most participants who used the templates on Weebly.com were

very pleased and satisfied with the easiness of all the features. Keira's teammate specifically described how Keira's experiences in constructing a Weebly™ website before was helpful for her to learn how to put all the pieces together to create an instructional website. And Keira was happy that she had another opportunity to try advanced features in creating a website. She said that

“Although I have made websites in the past and used Weebly, this time was different. I was able to explore new tools on the website and I was able to develop a more advanced website. I had never used links in my previous websites and I used multiple links in this site.”

Most participants described how they did not need to worry about the technical problems or learning curves, but instead, they could spend much more time and energy working on the content which challenged them to be creative and to think critically.

Shelby noted that the project of creating an instructional website was actually two projects in one. She learned how to develop an entire curriculum about one essential question and then how to create a website that could deliver the curriculum to people who were interested in the question. It took a lot of time and attention, but she thought it was worthwhile. As a major in communications, it was still very significant for her to learn to “evaluate what tools are needed to teach others, as well as the medium through which we can deliver them” (quote from the interview with Shelby).

### **Skills In Organizing Ideas and Presenting It For Audience**

During the interview, several participants described how the blog practice helped them sharpen their writing skills for a real audience. Some of them compared the blog practice to an online discussion, while the others compared it to writing a final paper. However, they honestly

acknowledged that they learned skills that they could not learn by participating in online discussions and writing final papers. Writing blogs helped them connect with people they did not know but who probably shared similar interests. Thus, they were willing to spend much more time in clearly organizing and presenting their ideas.

What Amy shared with me in the interview could summarize the skills that the participants learned about writing and organizing their ideas for others. She said that

“writing the blog got me to where I would write every post out on a piece of paper, read it a couple of times. And then I would type it, found pictures that I thought would go with it...I just wanted...um, I wanted much more time on my blog, because these blogs that other people made, they didn’t just write randomly, they spent time finding pictures and writing their ideas...clearly, to make everything work together. And I wanted to have that kind of skill too.”

By keeping a blog, Amy learned to think deeply and critically. In addition, she learned how to present herself in the way she wanted others to see her. This was the I-positions in her digital literacy practices that will be discussed in the second half of this chapter.

### **The Participants’ Attitudes Toward Their Digital Literacy Practices**

The attitudes of the participants were one of the three main themes in the first research question. When I was reading all the data, the following sub-themes related to their attitude emerged from the data. Due to the abstractness of attitudes, it was easier for the participants to describe their attitudes in words rather than using other modes. Therefore, there were less data than in other modes that were presented in this section.

## **Attitudes Toward Technology**

The participants generally demonstrated a positive attitude toward using technology for educational purposes. It was easy to obtain the information that they needed or to accomplish the tasks they needed to. For example, Shelby indicated that she could take the quiz on the way to class if she was late and thus would not miss the quiz. Coco mentioned that searching online for information was easier and faster than searching for the information in books or spending hours in the library. With the function of searching for keywords in documents online, she did not need to browse or scroll down through the pages. Instead, the tab key would take them to the next keyword. It was obvious that the participants embraced the affordances that technology offered. However, it implied the lack of deep learning.

Roxanne expressed a more neutral attitude toward technology, while Jack held a more negative attitude toward using technology in education. Roxanne thought that technology might be helpful and effective, but it is certainly not necessary. She emphasized that books was a means of technology that we can never put aside, but teachers can still use books and other technology tools to help students learn better. On the other hand, she also believed that “Technology allows the teacher to diversify their lessons and the students to more easily research needed information.” Jack affirmed the conveniences of technology, but at the same time, he expressed that he was not comfortable with the overuse of technology in every aspect of his life. The other five participants showed a much stronger belief and more positive attitudes toward technology use in education. They believed that students were familiar with using technology in every aspect of their lives. They believed that teachers could create a more engaging and interesting classroom for students if they knew how to effectively use technology.

The following sub-themes related to the participants' attitudes toward their digital literacy practices were generated from the seven participants' first two reflections on the two readings about technology use in education. One was the first chapter, "Goal of Technology Integrations: Meaningful Learning", in the book entitled *Meaningful Learning with Technology* (Howland, Jonassen, & Marra, 2012). The other one, *the Horizon Report 2013*, was an annual report about technology use in higher education and K-12 education published by the New Media Consortium. The participants could choose to read either the higher education version or the K-12 education version based on their personal interest.

Four of the participants did not major in education. Therefore, there was a need to help them realize why technology use is an important topic in education. From their reflections on these two reading materials, several sub-themes could be formed to understand some changes in the participants' attitudes toward their digital practices and development. Some statements in other reflections related to their attitudes were quoted here too.

### **Technology Can't Teach Me?**

The participants were surprised to realize that they did not learn from the Internet or a PowerPoint® presentation, except for Jack. Jack thought the experts confirmed his idea. He said that

"Yes, using technology is helpful for students in the learning process, but it is also on the educator's hands to maintain a standard and practice of how to teach their students; to not completely let go of the student and allow independent learning through technology, but rather replace the child-leash with holding hands if that makes sense."

However, other participants just realized that they were supposed to learn with the help of technology tools. Technology tools provided them with multiple opportunities to create

meaningful learning experiences, to communicate and collaborate with others, and to produce and present what they have learned. For example, Keira said that

“This chapter really hit me. I realized that the apps and technology that fill my Pinterest board are useless instruments unless I play an active role in the delivery of the information and content. Technology is only powerful when students are engaged and encouraged to think deeper.”

Their surprise was aligned with their low awareness of the possibilities of using technology to help them learn.

After reading the articles, some participants still believed that the Internet was teaching them. Shelby indicated that the statement that “technologies are no more effective at teaching students than teachers” was the biggest surprise to them, because they believed they learned more from the Internet than from the instructors in some of their classes no matter when and where they were. Shelby rejected the statement in the reading material and made her argument in the reflection that people still could learn from technology with the example of online courses. However, her argument demonstrated her low awareness of educators’ role as curriculum designers. Course contents were still designed and created by teachers rather than technologies.

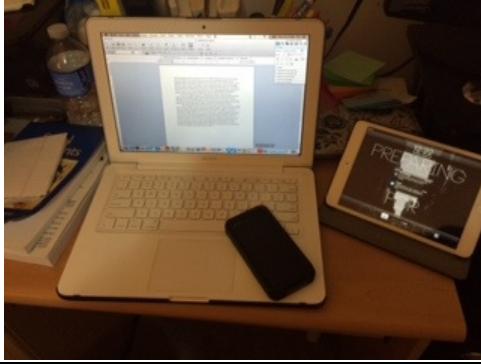
### **Table 11**

#### ***Sub-Theme: “Technology Can’t Teach me?” in Text Mode***

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Shelby’s argument for learning from technology—“Although I am sure they had a great amount of proof, for some reason I still feel as though technology can teach students. I continue to think about online classes and degrees that are earned online. Is that not a form of technology teaching? I honestly believe that at the rate we’re going technology could become a teacher in a sense and people can learn things from then instead of with them as the article somewhat suggested.” She took a picture of all her technology devices to support her argument that she was learning from the technology.

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Most participants had a change in their attitudes after reading the first material. They mentioned that they viewed teachers and computers differently. At the same time, some of the participants suggested that their change in attitudes toward computers further changed their attitudes toward schoolwork. This indicated that some of the participants started to take a more serious attitude toward their digital literacy practices and were becoming more willing to cultivate their digital literacy, because they realized that technology was supposed to help them demonstrate what they have learned.

### **Neither My Teacher Nor I Use Technology Effectively!**

The second sub-theme about the participants' attitudes toward their digital literacy practices was related to the participants' previous learning experiences. That is, it concerned whether their teachers were not proficient in technology use in education and thus the students had limited digital literacy development. What teachers and students did was transform paper-based learning and teaching activities to screen-based activities.

The participants were seldom or never aware of the possibilities of using technology for their learning. Their digital literacy skills stopped at the basic level. Therefore, their attitudes toward their digital literacy practices were vague. What they saw and experienced in K-12 education or in their early college years was what they believed about technology integration. Several participants realized that what they did before was the traditional way of using

technology in the learning process. However, some participants were still having a doubtful attitude about how they could use technologies to help them learn better after reading the two documents.

From their personal reflection on previous learning experiences, it was obvious that most participants used technologies with a narrow definition of hardware usage. Therefore, most participants were extremely surprised to know that so many technology tools, software programs, or applications could be applied to the learning process when they read the Horizon Report. They even did not know of or had never used some of the technologies mentioned in the document. Only two participants had experienced the BYOT program in high schools. Therefore, these two participants had a more positive and promising attitude toward using technologies to enhance their learning and more confidence in their digital literacy practices.

A few participants embraced the new technology trends immediately. Knowing the great potential that the advanced technologies could bring to education made them excited. For example, they considered how they used the tablets and smartphones in their learning process to support the idea of the popularity of mobile device learning. Their excitement motivated them to explore new applications when they were looking for programs to introduce in their commercial project.

On the other end of the spectrum, several participants reflected on the use of mobile device and started to question the effectiveness of using them, because they believed it became easier for them and their peers to be distracted due to the easy access of mobile devices. Keira took a picture of her friend being distracted by her smartphone in class. Some participants still wondered how these technology trends could be effectively put into practice in K-12 education while the resources and funding were so unevenly distributed in the states. After learning more

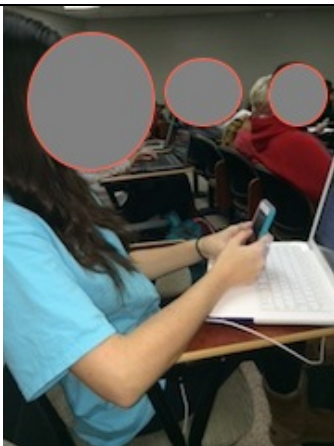
about emerging technology tools, the participants developed a more critical attitude toward using technology effectively in classroom and a more doubtful attitude toward their digital literacy skills.

This sub-theme again appeared in the Expand Your Learning Circle Project. When the participants were asked to critique an assignment or a presentation they had in another class, they pointed out the boring design of instructors' presentations, wordy handouts composed in Word®, or assignments asking them to write several paragraphs or pages using word-processing tools. This project was due in the last month of the semester. At that moment, the participants' awareness of meaningful digital literacy practices was strong and their technological skills had already improved a lot. As a result, the participants demonstrated a strongly positive attitude toward their digital literacy practices and presented many creative ways to redo the assignments or the presentations in other classes. They were confident that their redesign would help students in those classes learn better.

**Table 12**

***Sub-Theme: "Neither My Teacher nor I Use Technology Effectively!" in Different Modes***

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Keira showed how her peer was distracted by the mobile devices in class.

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## **Knowledge Construction or Just Information Acquisition?**

The third theme from the participants' reflections was that 21<sup>st</sup>-century learners were students who engaged in learning with the help of technology and thus developed the ability to construct knowledge rather than just absorb information. The participants realized that in their digital literacy practices they basically acquire information most of the time. Without being engaged with the materials, there would be no learning or knowledge construction.

Several of the participants acknowledged that they never thought about using technologies to help them construct knowledge. Instead, they were mostly acquiring information when they thought they were doing research online. Coco described her surprise when she read how the authors compared information delivery to grocery delivery in the reading about meaningful learning with technology. Then she realized that what she did with online research was just like buying pizza or fast food made by others and she just ate it without having a second thought about the food. Several participants described the statement as eye-opening and claimed that it truly changed how they viewed the possibilities of technology use in their learning. The participants started to assume a critical attitude toward their digital literacy practices and to question whether they or other educators were using technology appropriately to create meaningful learning experiences.

A good example was Jack's critique. Jack reflected on his personal learning experiences and critiqued his science teacher in high school who used podcasts but refused to work on solving problem with them together. Jack compared his science teacher to an instructor he had on the university campus. The university instructor banned emerging technologies, the students' laptops, and smartphones in class; instead, he used the old technology of traditional paper-based instruction. However, Jack learned more from this technique than from watching the podcasts in

his high school science class. Jack believed that the keys to effective use of technology in education were the instructor and the design. When instructors design good literacy practices, then students definitely learn better no matter whether they make use of old or advanced technologies.

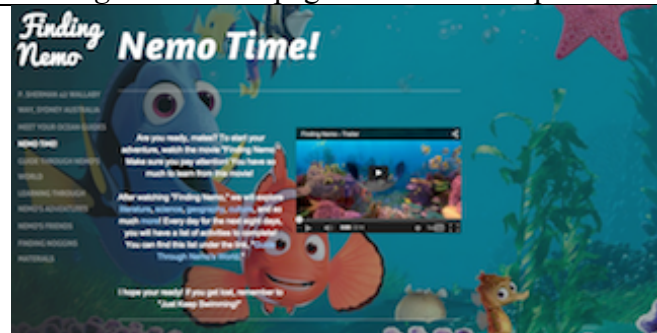
This sub-theme of the participants' attitudes toward their digital literacy practices appeared again in some of the participants' reflections on their 20% Design Project and the Learning Adventure Project. Some participants believed that the digital literacy practices they designed would give learners the opportunity to be more engaged and thus they could construct knowledge rather than merely acquire information. Coco, Keira and another teammate were proud of their Learning Adventure Project. They created a website with the focus on film education in the 21<sup>st</sup>-century learning. They used the film *Finding Nemo* as their example to teach children literature, science, geography, and culture. They created different worksheets and hands-on projects for learners to complete while interacting with resources on the site. Table 21 shows some of their designs for this project. During the interviews, all three of them said that this project was the most meaningful project in which they had the opportunities to practice what they had learned throughout the semester. They mentioned that they actually learned more deeply about all the knowledge that they wanted their learners to construct. They realized that when educators are creating a good design for their learners, the educators themselves actually benefit from the design process as well. In addition, educators need to be familiar with the digital literacy practices before they ask their learners to employ them. The three participants became much more confident in their technological skills after finished this project.

### **Table 13**

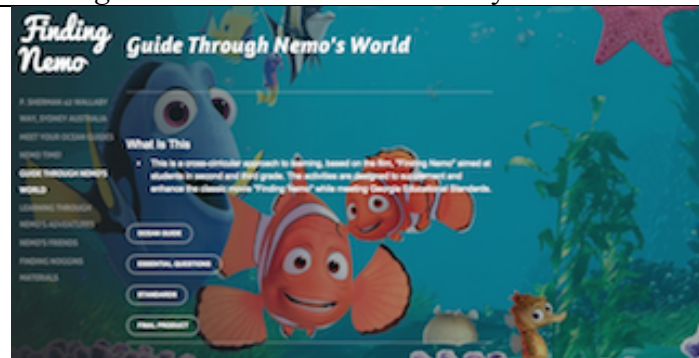
#### ***Coco, Keira and Molly's Learning Adventure Project Sample Pages***



*Finding Nemo* homepage with essential questions that they wanted their learners to learn



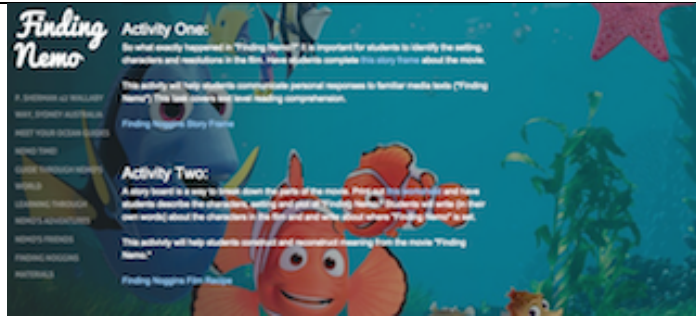
*Finding Nemo* Introduction—basically about what their learners could expect to learn



*Finding Nemo* Standards—listed standards from Georgia Performance Standards for literature, science, geography, culture, and standards about technology from other resources



*Finding Nemo* Literature page—list of learning materials (in other subjects, they listed books, external websites, and videos)

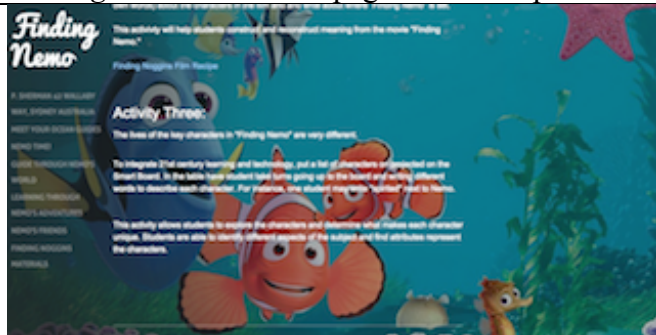


*Finding Nemo* Literature page—list of activities

**FINDING NEMO FILM RECIPE**  
 FILL IN THE BOXES TO DESCRIBE THE CHARACTERS, SETTING, AND PLOT OF "FINDING NEMO"

NAME OF CHARACTER	WHAT WAS THIS CHARACTER LIKE?
WHO?	WHAT?
WHAT HAPPENS AT THE START?	HOW DO THE CHARACTERS FEEL?
WHAT DID THE CHARACTERS DO?	HOW DID IT MAKE YOU FEEL?
HOW WERE THINGS AT THE END?	WHAT IS THE MORAL OF THE STORY?

*Finding Nemo* Literature page—an example of the worksheet they created



*Finding Nemo* Literature page—an example of an activity requires learners to use emerging technologies. In this case, they would use a Smart Board.

### Being Open-Minded and Coming out of the Comfort Zone

The last sub-theme about the participants' attitudes toward their digital literacy practices in the technology-enhanced, multimodal, dialogical learning environment was keeping an open mind. When the participants were asked to make a commercial for a technology tool or a software program, I strongly encouraged them to choose a new tool that they never tried before. Some participants took my advice and told me that it was a rewarding experience.

In the Expand Your Learning Circle Project, the participants were asked to redesign an assignment or a presentation from another class with the aid of technology. Again, they were encouraged to try some new software programs. For example, an e-poster software program or an infographics software program could be good choices to use for redesigning a presentation. Some participants did try to use new tools for projects throughout the class. The participants tried new programs not merely because of Maggie's or my advices but also because other participants had tried using different tools, which changed some of the participants' attitudes.

A few participants told me during the interviews that they had learned that they need to be open-minded in order to keep themselves updated with the trend of using technologies to represent themselves or to communicate with others. Julianne said that there might be possibly a technology tool for everything. Just because she did not know about a particular tool did not mean that it did not exist. Therefore, she needed to search for the best tool to achieve her goal. The change in her attitude demonstrated her development in media literacy.

### **The Participants' I-Positions in Their Digital Literacy Practices**

In this research study, the participants kept interweaving their past learning experiences with their current learning experiences. They needed to talk about what kind of learners they were before and what kind of learners they are now. At the same time, they needed to switch roles between learners and teachers. The role of a teacher was an imaginary one for most of them. Therefore, it was more challenging for them to picture themselves with all the expectations they would have of a teacher.

For discussion, they talked with their peers and the instructor in the same classroom. In addition, they also talked online with their partners who did similar projects and read the same materials without meeting and knowing each other. Sometimes they had unexpected readers on

their blogs and this opened yet another conversation. The participants' I-positions were definitely changing a lot in this technology-enhanced, multimodal, dialogical learning environment. It was important to find out what happened to the participants' I-positions, given the many roles they were playing and the interactions going on in their learning process.

As indicated in the literature review, the way an individual thought of himself would have an impact on how he interacted with others. The words an individual uses always initially come from others. However, when the individual makes a new utterance, he gives a new meaning of those words (Bakhtin, 1986a). The new utterance represented the individual's understanding of others, the world, and himself. A dialogical classroom would create a space where teachers and students could bring in diverse voices to facilitate what Bakhtin (1981) believed as responsive understanding. In this study, a dialogical learning environment was found in the physical classrooms as well as the virtual space of the seven participants' blogs. Data related to the participants' I-positions were collected from the seven participants' blog postings and comments, the instructor's observation notes in class, and the photo elicitation interviews with them. However, due to the abstractness of the concept of I-positions, most of the supporting quotes were from the interview transcripts. Four main themes with several sub-themes are presented in the following section to answer the second research question, which was about the participant's I-positions in this technology-enhanced, multimodal, dialogical learning environment.

### **Put On A (Future) Teacher's Hat**

The first main theme for the participants' I-positions was that they played the role of a teacher. Four of the seven participants were not education majors. Even though I had made some changes to the topics addressed in this class so it would be appropriate for the participants

in their personal learning, there were still some projects that required the participants to think as educators, and moreover, to design teaching materials. In those projects, the participants could choose to think of themselves as K-12 teachers, college instructors, or personal tutors in any subject. Their students could be anyone from a toddler they were hired to babysit or members of an older generation who needed to learn basic computer skills. The learning setting could be formal or informal. The participants had great flexibility to design learning activities and materials that should be included in these projects.

When the participants were describing their designs, they referred themselves as teachers or educators. The education majors usually adopted what they have learned in other education courses to support their designs. As for non-education majors, they used their personal learning experiences with teachers in previous schools or classes to support what they designed for their projects. Some non-education majors considered themselves as parents who would also be educators and they further described how their designs would work for children.

In the participants' reflections on the assigned reading materials, they frequently described their supporting ideas or arguments from an educator's perspective. Once they articulated their beliefs or arguments, they usually moved on to the expectations of their future selves or their role as teachers in the 21<sup>st</sup>-century classroom. They would clearly summarize what 21<sup>st</sup>-century teachers should do with their students, students' parents, and colleagues in order to create more significant and meaningful learning experiences. Some participants would delve into the topic of their teaching careers in order to talk about their concerns and worries, whether or not they were education majors.

#### **Table 14**

##### ***The Participants' Quotes about Seeing Themselves as (Future) Teachers***

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"If I were a teacher I would want my class to be more about real concepts students would need

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for life and less about what it takes to pass a standardized test.” Amy, a non-education major, wrote this sentence in her reflection on augmented reality. She believed that augmented reality allowed students to learn actively about the knowledge rather than merely having the knowledge crammed into their brains.

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“As a future Speech Pathologist, it is imperative that I stay up to date in current technologies...” from Keira’s first reflection. Keira described herself as a *future speech pathologist* more frequently in the first few reflections. Later that semester, she used the term *speech pathologist* directly. Based on my observation, I felt that she gained much more confidence in being a speech pathologist who would be good at integrating technology to help her patients. Her last three projects were fully developed and very well-designed. In addition, she even critiqued her original ideas for the 20% Design Project after reading some articles and meeting with several speech pathologists. Her confidence in seeing herself as a speech pathologist was beyond what a freshman usually had.

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### **Seeing Oneself as a Teacher and as a Student at the Same Time**

The second theme about the participants’ I-positions was the role switching between that of a teacher and that of a student. This theme was particularly obvious in the Expanding Your Learning Circle Project in which they needed to give a critique on the original design of a poorly-designed assignment or class presentation from a student’s perspective. Then they needed to switch to the instructor’s perspective to redesign the assignment or the presentation in order to motivate and engage their students. In other projects or reading reflections, some participants also switched the role between a teacher and a student in order to talk about their opinions. They kept switching between their roles of a teacher and student not merely in the current physical classroom but also in the virtual blog discussion.

The participants in the interviews, especially the non-education majors, acknowledged that the role-switching was very challenging and even a little bit annoying in the very beginning of the semester. The non-education majors said that they could not think as teachers in the very beginning. However, practice did make it better. They felt it was easier for them to switch between the two roles as time went on. Two sub-themes were generated from the participants’ interviews.

**Ha! I've Got Your Point Now!** Several participants affirmed this role-switching experience as a very rewarding one, because they said it gave them different perspectives to think more about what they were doing in other classes. They started to think about the objectives of the class activities or papers. For example, two participants were impressed by the Expanding Your Learning Circle Project and thought that I should share their redesign anonymously with their instructors in order to let their voices be heard. When they did the critique, they learned to appreciate what the instructors wanted them to learn. However, they firmly believed their redesign would keep that main point but added a little bit *spice* to it.

**Mmm... Empowerment!** Another important sub-theme from the role-switching practice was the empowerment that the participants felt. Most of the participants thought that the Expanding Your Learning Circle Project was very challenging. First of all, it was difficult to find an assignment or a presentation to change. Most of the participants were used to taking their instructors' assignments and lessons for granted. Even though they would complain, they usually merely grumbled that it was too much or too difficult. They never imagined that they could give advice on how to change anything on the syllabus.

Several participants scheduled an individual meeting with me during the semester to show me what they wanted to redesign or to ask me to give them more directions. Amy actually brought three syllabi to show me and asked me to choose one assignment for her. Therefore, I spent a little bit of time in class to explain this project to them and used one participant's idea as an example to help the other participants know what they could possibly do. One point I made clear was that this was their choice, not any other person's. They had the power to change something they did not like.

Amy told me that it was a very eye-opening talk to her. She was not able to make the decision was because she did not think she could do that as a freshman. She did not think she had the professional knowledge to change anything developed by a professor with many years of experience. However, after I explained the project to her personally and in class, she felt that she was empowered to make maybe just a little change.

Coco said that what really changed her way of thinking was the Expand Your Learning Circle Project, because that project started from the students' perspective about why they did not like the assignment or the presentation in another class. Then she felt that she was empowered to change the assignment or the presentation for that instructor. She felt that her voice could be heard.

Another example was Julianne. She discussed how she kept switching her role between a student and a teacher for her 20% Design Project. She designed a website to teach high school students to develop photo literacy, because that was what deeply impressed her among the reading materials in this class. She said that she imagined herself as a teacher in her "photo-literacy project." Therefore, she needed to think about what she wanted to talk about as an educator, but she also needed to think about what her students needed to know and what would motivate them. During the interview, she said,

"For me, you know, I am a communications major. It was very interesting to see photo and video editing from a different point of view and for different purposes of use. But it is really helpful. I can still use this idea in the future to teach maybe my colleagues, especially you know I am going to start my first official job as a PR practitioner in August. Who knows what I need to create or publish? So I really enjoy the skills I learned in this class."

Coco expressed similar idea to Julianne's idea during the interview. She was confused about the roles she played in all the projects. However, she thought she learned a lot from this role-switching experience. She said,

“I learned a lot about the user experiences in that redesign project...um, or I think I should say in this class, actually. How do you make people learn? What is important for them to learn? I think we focus a lot on our audience, we think as our audience, but at the same time, we think as ourselves who are teaching people to learn...and we learned how to do it through the projects we did in this class...I guess I am a learner but also a teacher, or, um...a learner learning how to be a teacher?”

### **Construction of Selves in Their Blogs**

The third theme was the construction of selves in their blogs. Most participants had no blogging experiences. Roxanne said that she had previous blogging experience later explained in her interview that her experience was in using another blogging service, Tumblr, which was basically like what most college girls did with Pinterest: she used it to collect images and seldom posted texts. Therefore, keeping this blog was still a big challenge for her. However, she said that she was willing to keep it as a personal portfolio or journal that could show her growth as a teacher. Due to their unfamiliarity with blogging, the participants demonstrated a lot of growth within the semester not merely in their blogging skills but also in their construction of selves. Two sub-themes that emerged from the data are presented here.

**Building a Professional Image.** Amy was the first one who surprised me with her construction of self in her blog at the end of the second month in class; February 27, 2014 was a date that I would not forget. Amy and Lori had been best friends since high school, so they always came to class and left together. However, on that day, Amy stayed at her seat until every

single student had left the classroom, including Lori. Then she asked me whether I could do her a favor. I was not sure what she wanted, because she had not yet turned in two reflections and the draft for her 20% Design Project. I was actually ready for her to give an excuse for the late assignments or to ask for a longer extension without penalty. However, I still smiled and asked her how I could help her. Then she told me that she wanted to re-do her blog and would finish all the late assignments on the weekend. I was very surprised and wanted to check with her about what happened because this never happened before. Not a single student would tell me that they wanted to re-do the assignments after almost half of the semester before. Then she told me that it was because she felt bad about herself. I definitely wanted her to explain that, so I inquired further. She started to tell me how embarrassed she had felt about herself after she viewed her partner's blog over the past two months. She said that her partner had built up a very professional image in all the postings. Compared with her partner, Amy felt so embarrassed that she was just writing nonsense and so just tried to finish the posts. She never really thought about building an image on her blog. However, she had a dream to win the Miss America crown and was highly involved in beauty pageants. She cared about what she did in her real life but did sloppy work for this blog. That was why she wanted to re-do the whole thing. I was surprised but pleased, and without hesitation, I agreed that she could re-do her blog.

The morning of March 4, I received an email from Amy in which she told me that she fixed her blog and finished all the assignments that were late. I checked her blog and found that she actually re-wrote almost every post before that day. She added more ideas and personal experiences to support her thoughts. All the images she used were of the same size and were aligned with texts. The titles of every post were also clearly stated with the topic instead of being just one keyword. After reading her new blog, I emailed Amy to ask her whether she

would be willing to share her experience with the whole class. She agreed and did a good job talking about the motivation for her to re-do the blog with the whole class. She said that it was because of the differences in the self-images she saw on her partner's blog and her own that she decided to start over. Amy's talk started a ripple effect in my class.

After that day, several participants in my class started to give their posts creative titles instead of standard ones with the topics of the reading materials. A few of them also gave titles to their blogs instead of saying "Someone's Course Number Blog." Some participants started to give captions for their images and made sure that their images were not of different sizes. Reading their blogs started to be a pleasure after Amy shared her experience in class.

However, this was not where the ripple effect stopped. Two weeks before the end of the semester, the participants were reminded to check their blogs to make sure that they did not miss anything for the final evaluation. I also reminded them that this would be the last chance for them to make changes if they wanted to win the Best Overall prize for the semester. If they really wanted to impress their classmates and me, it would be good for them to see what their other classmates had done and how they had designed their blogs. This encouragement, and certainly the added enticement of the prize, pushed some of them who had never read their classmates' blogs to take a quick look at others' blogs. This was another ripple effect.

Julianne, a senior in communications, redesigned her blog after Amy shared in class. Her new blog was very organized with tags and categories labeled. She separated the reflections into three categories: the reading reflections, the project reflections, and the 20% Design Project documentary. Even though she had some missing reading reflections, she systematically presented other assignments and helped her readers to easily find what they wanted to read.

Apparently some participants went to read her blog after I encouraged them, because a

few participants then created categories and tags for their blogs as well. Jack told me that he changed because he thought it looked really professional and organized. Since he was going to use this website as part of his portfolio for job applications soon, Jack decided to make it represent the professional image of him. Amy also saw Julianne's reorganization of the blog. However, she could not figure out how to do it. She came to me for help to reorganize their blog posts.

After Amy changed her blog for the first time, she started to show strong interests in helping others learn more about themselves. During the interview, she said that it was like her passion was reignited. She told me her passion had originated in middle school when girls were being mean about each other's appearance. During that period of time, she did not know how to appreciate herself but just needed to deal with the other girls' attitudes and words. Then she became involved in beauty pageants and learned how to see herself better as a person who had confidence and the ability to accomplish many things. As time went on, she became so busy presenting herself in a certain way that she forgot what she needed to be as a college student until she read her partner's blog posts. Therefore, she changed her Learning Adventure Project and the 20% Design Project to the topic of finding oneself. It turned out that some of the projects Amy did throughout the semester showed the New London Group's idea of design. The most important thing was that she put herself in the center of the design process. When Amy was asked about her experiences in blogging, she described her experience in the interview in the following words:

“Her way of presenting herself was a lot different than mine. I was just all over the place, there was no clear flow in mine, but, with hers, it was just, she was just very confident, when she spoke, she was like, um, she had all these different points that she wanted to

make. And I was not like that, so I wanted to fix that, and to change a little bit, to make mine more, to come across more confidence. She was building a very professional image and I was NOT [emphasized]. I was immature, and I want to be like that. As a student, I was so immature.”

**Showing Their True Selves in Their Blogs.** The second sub-theme about the participants’ construction of selves in their blogs was revealing their true selves in the writing. In the very beginning of the semester, it was easy to tell that none of the participants were familiar with writing blog posts. Several of them posted their reflections in the format of an academic paper to their instructors. The words they used were formal, their reflections were more like summaries of the reading materials, and there was nothing that their readers could relate to. After I shared some tips on writing blog posts, all of them ceased to use that format and started to make their writing look more like personal blogs instead of papers submitted online in a standard academic format. However, the content was still mostly the same, and as a reader, it remained hard to relate to the writer.

What really changed their writing were the dialogues they had with both their classmates and their virtual partner. When they commented on their partner’s posts, they did not use an academic tone. Keira said that writing the comments really changed her tone of language and she started to write in a more colloquial way to interact with her partner.

When the participants were asked their feelings about trying to use different modes to present their thoughts in the blogs during the interviews, they all said that it was very challenging, as discussed in the previous section about their skills. However, they also stated that they actually liked it more than they thought. Originally, they thought keeping a blog would be a boring and tedious practice, especially the reading reflection posts. However, the reading

materials were mostly true stories about how others use technology to help them learn. One participant, Roxanne, said that that made the blog practice a fun activity.

When they were asked about whom they were writing for in the blog practice in the interviews, all the participants answered that the instructors and their partner were the only two audiences in their mind when they began. However, most of the participants acknowledged that this changed over time. Even though there was not much interaction between their partners and them, they were still aware of their partners' attention. Due to the attention they received from their partners and even people around the world that they did not know, all the participants said that they changed from a formal writing style to a more personal, casual writing style as time went by. For example, Keira's opinion about how having a partner changed her way of thinking and her way of writing. She said that

“It helped me to make sure that I put meaning into my post rather than, just like, like thinking a post or whatever, and I didn't want to sound like stupid in my posts, because someone was gonna read it critically.”

Roxanne had an interesting experience in her blog and Twitter practice in this class. A week after the commercial project was done, Roxanne came to me and told me that the CEO of the Web 2.0 tool she introduced in her commercial tweeted her and complimented her commercial. She was excited and surprised. During the interview, she described how that changed her writing in the blog.

“I thought it would be only you and maybe some classmates...I wasn't expecting a large audience. I wrote in a slightly, um, like, entertaining way, until I saw that tweet from the CEO of Scoot and Doodle. I guessed she read my blog first and then found other things I did and my Twitter account, because the commercial was posted on my blog. That made

me aware of, um, like, oh, more people are seeing it, so that changed my mind. I guess, um, I am kind of proud of myself [laugh], so I changed the tone of my writing a little bit...still entertaining, but more about me...as a student, and as a history teacher who is good at technology, I think.”

Some of the participants also said that it was fun because they were virtually talking with their partner and an even bigger group of strangers. All the participants expressed their increased interest in reading and commenting on strangers’ blogs in the future just as they did in this study. When the participants were asked whether they preferred pairing up with someone they knew or someone they did not know as they did in this study, all the participants said that they preferred having a virtual partner like this. Without knowing who this person was in real life or having the chance to meet each other, the participants felt that they could do more free writing and genuinely share their perceptions and ideas.

### **Expectations on Peers**

The last theme that emerged from the data came from a few participants’ interviews. Several participants were not education majors. They honestly talked about their resistance and negative feelings about reading the materials and doing projects in the very beginning. However, the flexibility and freedom that they had for the projects really helped them to design activities and materials in their major fields. In addition, the interactivity with their peers and instructors was of great help. Being able to see how their peers, especially the education majors, did the projects and reflected on the reading materials and then discussing the projects as a class helped the non-education majors accomplish their projects. One of the participants said that it was like taking baby steps as they imitated their education major peers. Julianne expressed that she was so happy to see her education major peers being so creative in designing fun learning materials to

help people learn instead of merely giving them tests. Roxanne's teammate said that she learned so much by working with Roxanne and noted that she could see Roxanne being a cool history teacher who could help her students to develop strong critical thinking skills.

### **Summary of the Participants' Experiences in the Technology-Enhanced, Multimodal, Dialogical Learning Environment**

The participants in this study showed some changes in their awareness and attitudes relating to their digital literacy practices and improvements in their skills in creating multimodal compositions to represent themselves. While they were in this technology-enhanced, multimodal, dialogical learning environment, they also positioned themselves differently. As a researcher, I was really curious about whether they felt the differences in this learning environment and how this environment had influenced them.

During the photo-elicitation interviews, the participants were asked to either make another artifact or to bring some images to demonstrate their perceptions of this learning environment and how they saw their digital literacy practices. I did not use the term "digital literacy practices" with them when I told them to prepare an image for the interview. I basically told them to think about what we did in class. Some of them brought images and some of them brought an object. Some of them forgot to bring images, so they created an artifact during the interview. This time, they were not confused and did not hesitate to make one just as when they have been asked to create one at the beginning of the semester. In addition, they demonstrated their creativity in visualizing their perceptions and ideas this time. Therefore, I am excited to use what they presented and shared with me to conclude the data presentation.

#### **Table 15**

##### ***The Participants' Final Artifacts about Their Experiences in this Study***



Coco brought this artifact that she created at home to show how she saw her digital literacy practices right now. She thought that technology was like a virus in the 21<sup>st</sup> century. Coco majored in biological sciences, so she made a virus strain on a DNA to show her perceptions about what we did in class. She said, “technology is like a virus that just spreading like crazy, like taking over like our culture, our environment, and learning, um...the learning system.” When I asked her whether that virus representation had a negative connotation, she said it totally depended on the situation. This was different from what she said in the very beginning of the semester, especially regarding her attitude toward Google. She said, “after this semester, I realized that technology is not like an elixir. It actually can be harmful in some ways. We just need to learn how to use it wisely. Say, um, like Google, I thought we learn everything from Google, but apparently not...we learn a lot from people around us...I actually learned a lot from Keira this semester. So I guess...if you think about this [how much we relied on Google], then technology is really like a bad virus.” Coco’s attitude changed a lot because of the interaction between herself and her partners in this learning environment.

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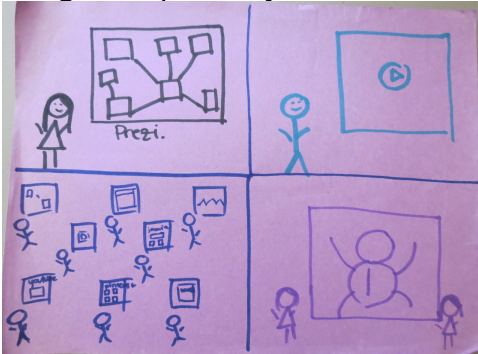
Amy brought an orange with her to the interview. She kept playing with it like a ball before we started. I had no idea why she brought an orange with her until I asked her to share her image with me. Then she put the orange on the table and told me that is it. I was laughing and speechless, so I asked her to explain it to me. She started to tell me her rationale.

“Um...was the question what did I learn in this class? Or what was this class to me? Um...well...because this class, like...challenges you to be creative, and...to think outside of the box, I started thinking what something I could use that you would exactly use to explain this class to us. And...so I decided to use an orange, [emphasized]. Um, I use an orange because, um, of its color, of its shape, and um, eventually how it can be divided. So say, when I think about this class, um, it’s like an orange because an orange is a vibrant bright color, and this class

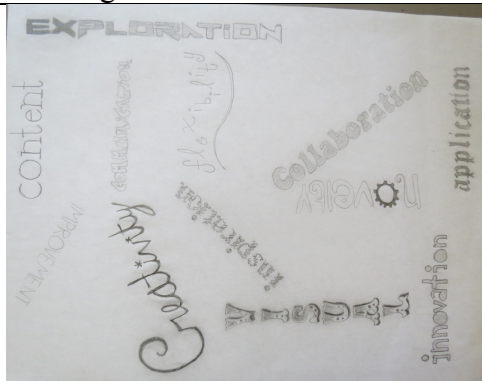
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was a lot of fun...and very enjoyable for me. So, um, the bright color of it means being happy and so many different things that we got to do. And, um... an orange is round, just like this class is well-rounded, and it covered a multiple, um, a multitude of different things, and topics, and subjects, and then, it can be divided evenly among people, so I thought about like everyone in our class can bring an orange and divided into certain amount of pieces and then everybody can get different pieces, so everyone can see something differently...so that's why I brought an orange to explain to you what this class was to me [laugh].”



She also drew a picture to show how she saw this class. Amy was aware of the diversity of the projects, the assignments, and all the different modes I used in class. She said that the way I taught in class kept her very motivated and wanting to do her best. “I know you work hard for us, so I want to give you that same work ethic back” was what she told me in the interview about all my modeling in class. She never thought about these many ways that she could use for her personal life and her study. She said she even could use this for her pageant business and it would bring her to a more advanced level. Amy said that this learning environment was a very meaningful environment to her.



Roxanne brought an interesting image to me. It was a piece of paper where she had written several words in different fonts. She said that those words represented what she had experienced and learned in this class. The words she wrote were: exploration, content, improvement, communication, flexibility, creativity, inspiration, collaboration, novelty, application, visual, and innovation. All the projects and the reading materials helped her grow. She said that she never liked group work or projects and was mostly like a *control freak*, but she came out of her comfort zone and explored the possibilities with her teammates in this class, and she realized that sometimes teamwork was not so bad. The following were her words about her feelings regarding this class.

“I think, um, I am more thoughtful of, like, how I am presenting the work, instead of just, um, because all the other courses, I am sorry, they are just like, content knowledge, like, integrating

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that knowledge into a paper or something, but in this class, it's more like, um, OK, how are you going to use your final product, and how is that like really in a different aspect, creative, which is not something that's really asked much in other classes, to think differently, to see things presented differently, it's more like integrating the knowledge you already have, the creative aspect in this class. I can see myself really using it in my other classes. I want to be creative." Roxanne did see all these different modes and was inspired by the different things she saw and did. She also mentioned that it showed the possibility of everything. She was still proud of herself and excited about the conversation that she had with the CEO of Scoot and Doodle. She said that it had really opened the door for her to see how a different learning environment could create different possibilities.

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Julianne forgot to bring a picture, so she made an artifact to show her perceptions.



She said that the colorful pom-poms in the center showed all the diversity that we had in this class and the circle and stems showed how everything was connected. She enjoyed all the design projects and reading materials in this class, because she felt that they were talking to each other and talking to her too. She pointed out that her experiences in this class made her be aware of greater possibilities in trying new things or in presenting her ideas in different and complicated ways. This technology-enhanced, multimodal, dialogical learning environment really was a very different learning environment for Julianne and it helped her change and develop a different attitude and new skills about using technology in her learning but also in her job preparation. The following were her words about her experiences in this learning environment.

Julianne's quote for the last artifact

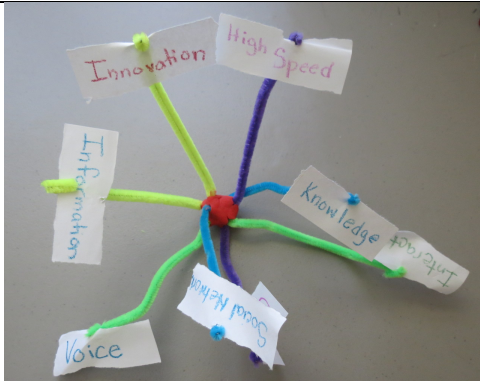
"I definitely learned a lot of the technology, like iMovies, iPhoto...learning about, um, using the tools. But it was more about that. There are way more possibilities that I can work with, especially when I have all these technological options. For example, say finding images, before I would just find a simple image, but now, I will find more complicated ones, like word cloud, or other stuff to express my ideas and that is just something I've never considered before. And it was because of you. Your using of all different kinds of things was the main reason that I started thinking outside the box, because whatever you gave us, like, um...any project you gave us, there would be at least ten different options on how to go about it, so you showed us, word clouds, wordpress sites, and google sites, it's just like everything, so I definitely benefit from that, because I start thinking in the way I have not been thinking so far. So when I think about a project, I will not just think about a word document, I will think about a poster, I envision all these possibilities. I am also aware that...um, if I want to build something, and there is no, there is no product or application that I know of, then I can probably find one...another thing was that all the things you gave us were really fun and engaging. That was why students would want to come to class. Because we don't want to come to a class where we just listen to someone who

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reads to us.”

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Keira made a 3-D model to show how she saw her digital literacy practices in this study. “It looked complicated, but it is actually a very simple idea [laugh]. Ok, so, everything starts from the center, which could be me, or anyone, or a group of people. Each stem is a technology tool and they all serve with different purposes. However, all these technology tools connect with people...after all, it is me using them to help me learn something or say something to others. Remember...we learn with technology, not from technology. So all these technology will help us learn new things, interact with others, and be creative! Just like what we did in this class. So many different things and so many different ways to do with technology. And one thing I learned is that all these are constantly changing...so just like what I did for my 20% Design Project, I need to keep updated all the time. Because I want to be the best help of my students.” The eight labels she had on her model were, innovation, high speed, knowledge, information, interact, social media, voice and constant changing. It really neatly summarized what we have done this semester.

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In conclusion, the main themes for these data were the keywords in the research questions. However, many sub-themes emerged from the data in different modes. These sub-themes will be further analyzed in chapter five in response to the New London Group’s idea of design and compared with the literature.

## CHAPTER 5

### ANALYSIS, INTERPRETATION, AND SYNTHESIS OF FINDINGS

College students in the 21<sup>st</sup> century grew up with emerging technologies in their hands. They search for information online, use word-processing tools to write papers, update their life events on numerous social media sites to share with their families and friends, read textbooks and submit assignments online, and they even view their transcripts online. Their lives revolve around emerging technologies, including both hardware and software programs. However, a major concern from the literature is an inquiry to understand why 21<sup>st</sup>-century learners' out-of-school literacy outperforms in-school literacy (Hull & Schultz, 2002; Schultz & Hull, 2008; Ng, 2012). When delving into this phenomenon, researchers are interested in another inquiry about the influences of 21<sup>st</sup>-century learners' multiple I-positions in their daily digital literacy practices on their learning. This study aimed to investigate a group of 21<sup>st</sup>-century college students' digital literacy practices in a technology-enhanced, multimodal, dialogical learning environment in order to offer insights related to these two inquiries. In the previous chapter, the main analytic categories were directly aligned with the keywords in the research questions and the sub-themes emerged from the data came along; that is, the participants' awareness, skills, and attitudes relating to their digital literacy practices as well as their various I-positions were presented with several subthemes. In this chapter, an interpretive perspective of these findings is presented to help depict a more integrated picture of the participants' changes and growth in these main analytic categories.

## **Multimodal Ensembles and Design**

As described in the literature review and the research design sections, multimodality was used as a main thread throughout this study. Originated from semiotic theories, multimodality was used as a theoretical framework in this study because of its emphasis on meaning-making and interpretation in various multimodal compositions created by individuals in communications, interactions, and representations (Kress & van Leeuwen, 1996). Learning and teaching both involve meaning-making and interpretation. With the different affordances in emerging technologies, 21<sup>st</sup>-century teachers and learners have many more opportunities and tools to construct knowledge in multiple ways.

Multimodality was adopted as a methodology in this study to help me understand the awareness, skills, attitudes, and I-positions that 21<sup>st</sup>-century college students have demonstrated and crafted in their digital literacy practices which was the process of their meaning-making. This choice of methodology informed the selection of multimodality as the data collection method. Therefore, in this data analysis section, the focus is on the participants' multimodal ensembles in order to answer the research questions. Central to the multimodal ensembles is the idea of design proposed by the New London Group (1996). The three elements in the idea of design were used to help analyze the participants' development of awareness, skills, and attitudes toward their digital literacy practices. The analysis is tied with the New London Group's idea of design to examine the participants' awareness, skills, and attitudes relating to their digital literacy practices.

### **Available Designs**

The first element in the idea of design is Available Designs. According to the New London Group's (1996) definition, Available Designs can be all the possible resources for

design. Their focus is much more on the grammars of semiotic systems. In this study, the participants were guided to design many artifacts. To them, Available Designs could be concrete objects, abstract concepts, or learning theories. The participants' awareness, skills, and attitudes were their Available Designs in this study. In the very beginning of this study, the participants demonstrated limited awareness and skills. Most of them demonstrated a very positive attitude toward technology. Their positive attitude was helpful for them to try different technology tools and thus helped them become aware of the importance and potential of technology tools. Being involved in the various projects also gave them opportunities to sharpen their technological skills. When the participants became more and more skilled, they developed a more critical attitude that helped them choose appropriate technology tools for different projects and properly design materials for different learners. The progression and changes of the participants' awareness, skills, and attitudes turned out to be helpful Available Designs for them to design teaching materials.

**Increased awareness.** Most of the participants in the very beginning of this study were not aware of all the possible resources available to them. Their awareness of the resources was mostly limited to their devices and some basic software programs. Sonia's surprise in learning iMovie is a free software program installed on her MacBook indicated her lack of knowledge of available software programs.

The participants had no difficulty in describing how they used technology daily in their lives; however, they had difficulty in coming up with approaches and ways they could use technology for their learning. This finding supported what Waycott, Bennett, Kennedy, Dalgarno, and Gray (2010) and Lorenzo and Dziuban (2006) found in their studies. Their student participants mainly used technology for their personal social life rather than school life.

Some participants in this study were aware of the functions of certain software programs but had never thought about using them for educational purposes. Some had never thought about using software programs beyond the Microsoft Office suite to present what they have learned in class.

For example, several participants mentioned the use of Skype and other communication software programs as a means of communicating with friends and family members. However, they never thought about or saw instructors use communication tools to host a guest speaker session or to set up an individual meeting when they could not meet during office hours. In Marley's reflection, she wrote that her communication with me via email and text messages motivated her to work on the idea of using social media for teacher-parent communication. Her example echoed the findings in Waycott et al.'s (2010) study that their student participants were in support of using communication technologies with their teachers and peers. However, Marley and other participants in this study definitely showed that the participants lacked awareness or knowledge of possible Available Designs, including technologies and some foundational knowledge in education.

In addition, the participants acknowledged that they did not know that there were so many software programs or applications that could be used in classrooms. The participants' lack of knowledge of possible resources was similar to what Ng (2012) found in her participants. Ng (2012) pointed out that there was always a gap between her participants' knowledge and practical use experiences of popular software programs, including YouTube and Prezi.

The participants in this current study demonstrated similar patterns. Even though the participants in this study were not asked about their knowledge and practical use of emerging technologies, they talked about their surprises and unfamiliarity with these technologies. For example, Coco described how surprised she was at using YouTube as a video recording tool

during the interview. During the personal interviews, the 13 participants directly said that the lack of knowledge or awareness of emerging technologies was the most crucial hindrance for them to create different types of work showing their knowledge construction. Julianne said it probably would still be a hindrance, but at least she learned that there were a great many resources on the market and she could find one if she reached out.

From the findings presented in the previous chapter, one conclusion that may be drawn is that the reason the participants' in-school literacy was not as good as their out-of-school digital literacy is due to the participants' lack of knowledge of emerging technologies and their lack of awareness of the application of technologies for educational purposes.

When the participants were in the technology-enhanced, multimodal learning environment, they saw their instructors, Maggie and me, using many different technologies to teach major learning theories. They also watched videos and listened to podcasts about other teachers' application of instructional technologies. Moreover, the participants were asked to do hands-on projects with the aid of both old and emerging technologies. The learning experiences in this study greatly helped the participants learn the possibilities and potential of using technologies in their digital literacy practices for their learning.

For example, Julianne indicated that she learned how to use advanced or complex visual aids to represent herself. She also learned how to be active in finding helpful applications or software programs to create multimodal compositions to make meanings if she did not know an existing one. Not knowing about a software program did not mean there was nothing available for her to use. This learning experience was particularly helpful for her as preparation for the future workplace because she majored in communication studies and needed to present and visualize ideas and thoughts.

The participants' increasing awareness of Available Designs helped them create various multimodal ensembles to communicate with others and to teach others about the topics they were interested in. The increasing awareness also challenged some of the participants to try different tools to help themselves prepare for their future career and thus created a collection of Available Designs. For example, Keira's 20% Design Project was a collection of applications for speech therapist. Her awareness of using appropriate applications for children who have different needs became the most helpful Available Designs for her project in this study as well as her future career.

**Established proficiency with emerging technologies.** The participants' skills in using emerging technologies for personal learning were also greatly improved in this study. In the very beginning of this study, in addition to the lack of awareness or knowledge of what Available Designs they have access to, the participants were not proficient with Available Designs either. They merely knew how to use the basic functional features in the resources they had. For example, the participants shared that they did not know that they could use the templates in Microsoft Word® to make tri-fold brochures or posters. Even if the participants were aware of the advanced features in PowerPoint® by seeing others' presentations, they did not manage to learn how to use those features.

On the one hand, this could be because they knew some other alternatives that might satisfy their needs. For example, Janet used Prezi for her presentation and never went back to using PowerPoint® because she felt that Prezi offered more cool and fun features that could make the presentation more interactive. On the other hand, the students' reluctance to try new features could be evidence that the participants were not motivated to learn the advanced feature of some resources at hand and were merely satisfied with the basic skills.

When the participants were asked about their skills in image and video editing, they surprisingly showed lower self-evaluation results. However, by reading the participants' reflections presenting with different modes and guiding them to complete video projects, it was evident that the participants were not capable of creating visual aids or video clips as another meaning making approach. Nevertheless, it did not take the participants much time to acquire the basic skills of editing digital still images or videos. Most of them commented on the ease of managing the basic features of the editing software programs.

The participants' skills in web use and web 2.0 publishing showed another interesting pattern of their proficiency. They were good at using different websites to fulfill their needs in daily lives, but they were not motivated to learn how to create websites because of the challenge of learning programming languages. It was because of their perceived difficulty of learning programming languages, the participants did not know there were some website hosting services that could help them create simple websites.

In a similar vein, the participants thought that keeping a blog would be a tedious job and thus they were not excited about it. During the interviews, the participants mentioned that the experience of keeping their personal reflection blogs was better than they thought. Once they tried these web 2.0 publishing tools, they were satisfied with the easiness and became more confident in creating websites or keeping blogs. This finding supported what Ng (2012) found in her participant—that it was not challenging for digital natives to transfer knowledge and skills in handling certain emerging technologies to similar technology tools.

**From previous learning experiences to current attitudes.** Another kind of Available Designs can be the participants' previous learning experiences and their attitudes. Duffy and Jonassen (1992) indicated that designers would reflect on what they have seen, what they have

experienced, and even what they have designed before. When designers reflect on these previous experiences, they might remember the activities or some strategies they used for them. Another possibility is that they could dig deeper in their memories and thus re-conceptualize “what it means to learn, to understand, and to instruct” (Duffy & Jonassen, 1992, p.1). The participant’s previous learning experiences played a primary role in their design.

Keeping a reflection blog in this study offered the participants the opportunities to recall their previous learning experiences. In Jack’s example, he remembered his learning experience with a science teacher who claimed that she integrated technology into her instruction but basically only used podcasts in class without further elaboration. When Jack had questions about the experiments, she did not even help him; instead, she asked him to re-watch the podcasts. Jack’s doubt and resistance in using technology for personal learning resulted from this bad experience.

Jack’s struggle with the idea of technology integration in education was extremely noticeable in the very beginning of this study. In my observation notes, I jotted down three times that he asked me about how to choose a web 2.0 tool and inquired about the purpose of choosing an instructional technology tool for the commercial project while the description and the rubric were clearly listed on the course blog. His inquiry showed me his lack of knowledge in emerging technologies as well as his lack of willingness and motivation to explore the possibilities.

His struggle showed again in the brainstorming process for the Stop Animation Project. His bad learning experience was not possible Available Designs to Jack; on the contrary, it became the biggest hindrance to him. Even though he did not participate in the interview, Jack described his experiences in this technology-enhanced, multimodal, dialogical learning

environment pleasing and helpful in his last reflection. The feedback from his peers and me helped him see the possibilities and advantages of using emerging technologies in education. Even though he was still not completely sure about the balance between the benefits and consequences of using emerging technologies, Jack expressed his willingness to try more.

On the other hand, Keira's reflections on her previous learning experiences became not merely her best Available Designs but also her project partners' Available Designs. Keira was in the BYOT program in high school; therefore, she had more experiences in using technology in both her personal life and her learning process. Even though she said it was all about basic skills, she was still more knowledgeable and skillful than her peers. During the interview, she said that the experience in this study was very challenging but in a good way. It actually challenged her to come out of her comfort zone and to explore many new tools. Given her background knowledge of the software programs she learned in high school, Keira stated that she was able to create her designs in a more innovative way and to make the projects more complete.

Furthermore, Keira was able to help her teammates acquire the basic skills. She and one of her teammates indicated in their reflections that the other two girls decided to let Keira be in charge of putting the website together. As it turned out, their Learning Adventure Project of using the cartoon *Finding Nemo* to teach children some major concepts in different subject areas was voted as the most well-developed and complete project in class. Keira's previous learning experiences served as great Available Designs for both her and her teammates.

From the participants' previous experiences, it was easy to tell that most of them had played the role of consumers rather than producers in their in-school digital literacy practices. They were not accustomed to using technologies to create artifacts to demonstrate their understanding. This could be because most participants were not aware of the possibility or the

potential of using technology to meet educational purposes, or it could be for the same reason that Ng (2012) mentioned in her study—that there was no motivation for her participants to use web 2.0 publishing tools because instructors did not require students to do so.

From the participants' Expand Your Learning Circle critique, I learned that most of the assignments that they had in college were still in the traditional paper format. There was no need for the participants to learn about image or video editing or web 2.0 publishing skills. However, their experiences in this multimodal, dialogical learning environment gradually drew their attention and awareness of using technology and helped them sharpen their skills in the use of educational technology. It was expected that what they learned in this study would help them create more meaningful learning experiences or have better preparation for the future workplace.

**Available Designs for the participants' instructors.** One interesting theme from the data was the participants' inquiries about their instructors' awareness, skills, and attitudes toward possible Available Designs. Most of the participants emphasized the significance of social media in their daily digital literacy practices, even though it offered both benefits and distraction at the same time for some participants. However, they expressed their curiosity and dissatisfaction with their instructors not using social media in class.

According to the participants, most of the assignments or class presentations they had in college were still given in the traditional formats. Final papers, two-page summaries, handouts with important concepts for memorization, or black-and-white and wordy PowerPoint® presentations were still the most common choices of the instructors. The participants could not figure out whether this was because their instructors might be digital immigrants (Prensky, 2001) as they had read about for class, or if their instructors did not know what kind of social media

they could use and how to use them, or if their instructors simply considered social media to be a distraction.

The participants' belief in the utility of social media for educational purposes was different from what Waycott et al. (2010) found in their study. The student participants in their study showed the same pattern of seldom using emerging technologies in personal learning, but this was because they thought that most emerging technologies were not created for educational use, especially social media. Therefore, it might be inferred that the participants in this study were already aware of the possibilities of using emerging technologies after staying in the technology-enhanced, multimodal, dialogical learning environment and thus developed the idea of adopting social media in personal learning. Once the participants were aware of the possibilities, they turned to examine their instructors.

The participants' high level of interest in social media and their dissatisfaction with the lack of social media use in class motivated them to design materials that introduced possible uses of social media in academic contexts. For their 20% Design Project, a few participants designed instructional manuals or websites to teach educators how to effectively use social media as a communication tool with their students or parents. A few participants designed websites or visual presentations to draw educators' attention to using social media as a channel to teach certain subject matters.

In addition to integrating the utility of social media in their 20% Design Project, the participants integrated the use of social media into their Expand Your Learning Circle Project. In the Expand Your Learning Circle Project, the most common critique about original poorly-designed assignments or class presentations was the lack of interactivity. One type of interactivity that the participants needed in class was interaction not merely with the instructors

but also with their peers. Some of the participants said that they liked the idea of the assignments, but what they did not like was that they were not able to see their classmates' works and to let their masterpieces be seen by others. The instructor was always the only one who could see everyone's work. Peer instruction was the missing piece in most of the assignments they had before.

Being in this study where social media was used for presentation, Kate expressed her appreciation that she had the opportunity to see everyone's work and that they could give feedback to each other during the design process. Therefore, when she redesigned the assignment, she changed the format from writing a two-page summary to making a video clip. Kate believed that this redesign would not only encourage the students to be more creative but also open the opportunity for the students to learn more about the topic from each other's works.

The participants' design for the use of social media in college classes demonstrated their growing awareness of Available Designs. By being exposed to this technology-enhanced, multimodal, dialogical learning environment, the participants experienced the possible use of social media to meet educational purposes. Therefore, their experiences in this learning environment became a catalyst that helped them see the possibility of using social media as Available Designs.

In conclusion, the learning experiences in this technology-enhanced, multimodal, dialogical learning environment helped the participants see different modes and affordances in emerging technologies. The participants' low level of awareness and their lack of knowledge of these modes and affordances constrained them to use them as Available Designs to create meaningful learning experiences. To better assist college students to see this and to re-educate

instructors in college to effectively integrate emerging technologies into their classrooms are two critical issues in 21<sup>st</sup>-century higher education.

## **Designing**

The second element in the New London Group's idea of design is the Designing, which concerns the process of design for re-presentation. From the perspective of the New London Group, individuals do not duplicate Available Designs; on the contrary, they create new meanings of Available Designs. Multimodal researchers think that Available Designs carry three different meanings, ideational, interpersonal, and textual meanings (Kress & van Leeuwen, 1996, 2001; Jewitt, 2009b). These three meanings were originated from Halliday's (1978) belief in social semiotic but they are now widely discussed in multimodal research, especially by researchers who adopt the social semiotic multimodal analysis perspective (Kress & van Leeuwen, 1996, 2001; Jewitt, 2009b).

The New London Group asserted that individuals use Available Designs to create new meanings or to transform knowledge. This claim is similar to what is emphasized in the social semiotic multimodal analysis. That is, it concerns the ways that individuals use available resources in different modes to make meaning or to construct knowledge within a social or cultural context (Kress and van Leeuwen, 2001; Jewitt, 2009a). Considering the topic from this perspective, the participants in this study were asked and challenged to use emerging technologies to design instructional materials for meaningful learning. The process of designing these materials for their target or imagined students was what the New London Group called the "Designing" in this study.

**Learning curves in ideational meanings in the Designing.** As most participants described in their reflections and the interviews, this study challenged them a lot in its idea of

design. It was an idea that they previously had had no opportunity to practice. With so many different types of design tasks in this study, the participants were learning how to use Available Designs to construct the ideational, interpersonal, and textual meanings through the image-text relations.

In the participants' reflection blog posts, the image-text interaction had a parallel presentation. Even though the participants were strongly encouraged to use different modes to compose their reflections, all the participants chose to use words and images. In other projects, the text and images may not have been obviously presented in a parallel manner, but the image-text relationships still could be seen in their videos, websites, PowerPoint® presentations, or e-posters.

To learn how to use different modes to represent what they tried to convey was very difficult for some of the participants. In Martinec and Salway's (2005) system of image-text relations, they discussed three types of image-text relations: elaboration, extension, and enhancement. From the data, it could be inferred that the participants learned to elaborate, extend or enhance the meanings they constructed with Available Designs. For example, Jack drew a laptop showing Facebook on the screen surrounded by a question mark and a few words describing his attitude toward technology use in education, which showed his perceptions and skepticism as to the potential and problems resulting from the overuse of technology. In this Designing, the image-text relation was equally general elaboration that clearly made meanings of his attitude toward his daily digital literacy practices.

Even though Martinec and Salway (2005) did not suggest a hierarchy in the three relationships, the participants expressed the difficulties of enhancing text with images or vice versa. Most participants were able to elaborate or extend their arguments or main ideas in their

projects or reflections with the help of visual aids. However, the goal of providing a purpose or reason, as Martinec and Salway (2005) explained about enhancement, was still proved to be challenging for some of the participants in this study. Their artifacts did not show the change in their skills in creating image-text interactions. For example, Keira mostly used images to elaborate her ideas and did a good job. However, in her reflection on visual literacy, she tried to use her painting of a ram to explain why she thought keeping a multimodal blog like this was a good challenge for her to learn how to see the world differently. This image-text interaction greatly confused her partner and did not help him understand her idea.

Some participants acknowledged that the way Maggie and I modeled multimodality helped them develop the ability to use web 2.0 tools to create artifacts that could convey abstract meanings. Amy acknowledged how much she had learned by seeing me use so many different types of materials to teach them and said that it had really helped a lot. She was the participant who was not consistently use images to support her ideas in the multimodal blog. She honestly told me that it was extremely difficult for her to find images or draw pictures to illustrate her ideas. Therefore, sometimes she just gave up. However, during the interview, she not only drew a picture to show what she had learned in this class but also used an orange to describe what her engagement in this class was like. All the 13 participants who did the interviews with me demonstrated similar improvement of their skills in using old technology and emerging technologies to make ideational meaning, particularly when their later efforts were compared with the artifacts that they had made in the very beginning of the semester.

In short, the participants' capability of using multimodal ensembles to make meanings was still in its infancy, yet they were highly aware of the significance of multimodality.

Therefore, they have developed an ability that they can keep cultivating and practicing in all aspects of their lives.

**Development in textual and interpersonal meanings and I-positions.** It is critical that Designing is not used to duplicate or to re-make Available Designs. “Designing transforms knowledge by producing new constructions and representations of reality. Through their co-engagement in Designing, people transform their relations with each other, and so transform themselves” (The New London group, 1996, p.76). Therefore, in the Designing, the participants had the opportunity to put on a new lens to see what new meanings they could make of the old materials. They were challenged to create new materials with some resources that they were familiar with. In addition, they made meanings to communicate with others. In the Designing, they might be able to view themselves, their peers, and even the world with a different lens. This kind of transformation represented the participants’ changes in their I-positions in the Designing.

Transforming Available Designs could create the textual and interpersonal meanings at the same time. From the perspective of researchers that employed the social semiotic multimodal analysis approach, textual meaning concerns the layout and the prominence. The interpersonal meaning has two main concerns. The first is about the interactions between the viewer and the sign maker of an artifact. The second is about what is shown in the artifact. Kress and van Leeuwen (1996) explained that the second concern means the “represented participants”, including the people or the objects in the visual.

Taking the social semiotic multimodal analysis approach to inspect the data for these two meanings helped me see the interaction among the participants, the instructors (Maggie and I), and a group of unknown readers. I also studied the interactions between the layout and elements in the participants’ artifacts and the viewers, which included the participants themselves. While

reading the participants' multimodal ensembles, I could not stop connecting the textual and interpersonal meanings with the idea of I-positions in dialogical self theory. The various modes in the participants' multimodal ensembles represented their understanding of the world and themselves.

*I as a mature student and I as a professional blogger.* Designing is transformation. When the participants were engaged in Available Designs to create new meanings, they were transformed by interacting with their virtual partner, their instructor, unexpected readers and even Available Designs. For example, the first ripple effect resulted from Amy's interaction with her partner. They basically agreed with each other's points in the reflection blogs, but there was never meaningful, visible interaction. Even though Amy said she felt her partner built a professional image on her blog, her partner never did a good job in giving Amy constructive feedback.

To be more specific, what transformed Amy was the interpersonal meaning between Amy and the represented participant defined by Kress and van Leeuwen (1996) on her partner's blog. By reading her partner's words and images, Amy started to see a professional blogger who was passionate about education. Or, in Amy's words, she was "a student who is responsible for her learning." Interacting with her partner's I-position as a responsible student motivated Amy to re-examine *her* I-position as a student at a prestigious university. As a result, Amy reconstructed her I-position from a regular student who did average work to that of a responsible student who truly cared about her own learning. This kind of positioning and repositioning is a basic feature in dialogical self theory. When an individual has a dialogue with others, he is also having a dialogue with himself at the same time and this process forms the positioning and repositioning.

What is more, Hermans and Hermans-Konopka (2010) indicated that there is a strong interconnection between an individual's personal position and social position. This strong interconnection will make the individual more sensitive about how his own life is shaped by the society as well as the community to which he belongs. Amy's example of re-examining herself as a student at a prestigious university showed her personal position and social position. She understood what her society believed about what a student in this university should be like. While having a silent dialogue with her partner's represented self on the blog, Amy was not satisfied with her I-position as an "immature student" and assumed that I would not accept it either. As a result, she decided to use Available Designs to re-design the old materials, her blog, in order to project a new I-position as a professional and responsible student within this college community.

Amy's repositioning of herself transformed her peers. As she shared her experience with the class, several participants in my class re-examined and started their work on the blogs differently. They crafted new I-positions as professional bloggers. For example, Patty and Marley started to give interesting and meaningful titles to their reflections instead of numbering each reflection with the title of the reading materials. Molly changed the template for her blog from a cute childlike one to a more clear-cut, professional one.

Several others paid attention to the size of the images they used in the blogs. Originally, many of the participants just inserted the images that they created or found without editing their sizes. Therefore, as a reader, I felt annoyed when I see a huge image that pushed the text aside or a small image with complicated messages appeared. However, after Amy shared her experience of repositioning herself as a regular and immature student, several of the participants

began to organize their images and even started to give them captions. These participants created new textual meaning by making some changes on their blogs.

During the interview, Julianne was the only one who said that she redesigned her reflection blog because of Amy's repositioning. She wanted to craft a new I-position as a professional blogger for her job application. Therefore, she started to use the advanced features of tagging and labeling provided by the weblog service and clearly categorized her posts to make it easy for her readers to find what they wanted to read. Her new blog, therefore, had a new textual meaning because of the change of the layout. As a result, Julianne initiated another ripple effect to help others craft or modify their I-positions as professional bloggers.

***I as a storyteller to tell life experiences, not as a trained writer to meet expectations.***

The interpersonal meaning between the participants and their virtual partners also transformed each participant's I-positions from that of a well-trained student who wrote what their instructor was expecting to that of a storyteller who talked about his true selves. Several participants' first reflections were presented in the format of a traditional paper on their blogs with the course number, the instructor's name, their names, and the official title of the reflection. After seeing their peers' reflections, they adopted a standard blog post style. The silent interaction between the participants and the textual meaning on their peers' blogs transformed the participants.

As the participants composed more reflection posts, they had more interaction with their peers. These interactions had a huge impact on the participants' construction of I-positions and interpersonal meaning. Keira, for example, indicated that her limited interaction with her partner changed her ways of writing and thinking. According to Hermans and Hermans-Konopka (2010), writing to different audiences creates different I-positions. Different I-positions produce different writings, or in this study, different artifacts. Keira's new I-position was her true

personality as a storyteller with a sense of humor. Her writing changed to a more engaging format instead of purely stating her thoughts. Her picture selection also changed to a more personal preference. In the interview, Keira said she learned a lot from her partner's limited feedback, so she wanted to engage him more. Her enthusiasm for more meaningful dialogues with her partner motivated her to create more significant interpersonal meanings and to construct a new I-position.

Chuck and Roxanne's silent interaction on his blog also transformed Chuck's I-positions and writing style. Before knowing that Roxanne was his reader, Chuck told me that he assumed his partner and I were the only two readers. Since none of us responded to him, he considered the posts more like homework. However, Chuck started to position himself as a storyteller who wanted to engage his readers after he learned that Roxanne was regularly reading his blog posts about his 20% Design project on educational games. At the same time, Chuck positioned himself as a more advanced student who knew a little bit more than Roxanne. He said he did not mean that he was competing with her; instead, he was inviting her to have more conversations. In this case, Chuck's I-position as an advanced student and his posts represented more than the passive understanding of the topic. According to Bakhtin (1981), writing his posts to invite Roxanne to start or continue the discussion showed that Chuck was trying to facilitate responsive understanding on issues about gaming in education.

Janet indicated that her writing style changed between herself on the blog and herself in the online discussion in other classes during the interview. She positioned herself as a trained writer when she participated in the online discussion in other classes because she knew what was expected in an online discussion. However, she positioned herself as a person who shared personal experiences and anecdotes on her reflection blog in order to learn from others'

experiences. Being able to customize her blog to construct the textual meaning also helped her construct this I-position and allowed her to convey the interpersonal meaning.

**Improvement in digital literacy practice and 21<sup>st</sup>-century competences in the Designing.** The major reason to design this technology-enhanced, multimodal, dialogical learning environment was to invite 21<sup>st</sup>-century learners to bring their proficient out-of-school literacy into an academic context. First, it was necessary for the participants to be aware of the potential of Available Designs at hand. After Maggie and I presented our instructional ideas with the aid of emerging technologies, the participants realized the importance of multimodal composition in personal learning. More importantly, they were aware that instructional technology is designed as a tool for them to visualize their thinking, represent their ideas, or constructing new knowledge. The digital literacy practices they had used for learning or their instructors had previously used for teaching was traditional and not particularly effective in cultivating their 21<sup>st</sup>-century competences.

This learning environment provided them with opportunities to develop creative and critical thinking. According to the Partnership for 21<sup>st</sup>-Century Learning (2015), when an individual becomes more creative, he will be able to “create new and worthwhile ideas” and “elaborate, refine, analyze, and evaluates their own ideas in order to improve and maximize creative efforts” (p.3). In addition, the individual will be have an open mind to new ideas from others and is willing to work with others to develop new ideas. The Partnership for 21<sup>st</sup> Century Learning also indicated that an individual who has critical thinking ability means he knows how to “reason effectively, use system thinking, make judgments and decisions, and solve problems” (p.4). The participants’ reflections on their personal blogs provided them opportunities to share their new ideas with their peers and to accept critiques from not only their partners bit also the

hidden audiences. This practice helped them develop their creative and critical thinking ability. Furthermore, in the various projects, the participants developed their ability to choose appropriate technology tools for different learning activities. They also developed the ability to critique others' designs and offer suggestions. For their Learning Adventure Project, they designed websites to help others find answers to essential questions. Their projects and personal reflections demonstrated progressions in creative and critical thinking.

In the participants' reflections on their projects, they said that the most difficult part of the Designing was not the technological part because they were able to transfer their previous software skills to new programs. The most challenging part was the meaning making process of the content. Although the content might have been an easy topic, finding a way to present it creatively challenged them to think critically. What my participants said echoed Ng's (2012) description of her students. Ng's students realized that they actually spent much more time in "thinking about and preparation of content and its integration into the technologies" (p. 1077). Furthermore, my participants affirmed that the meaning making process helped them develop an understanding of the content and made them want to come to class. Giving the participants opportunities to engage with the content and develop critical thinking is what 21<sup>st</sup>-century learning focuses on. The technology-enhanced, multimodal, dialogical learning environment served as a platform for these 21<sup>st</sup>-century learners to develop the competences.

Another purpose to create this learning environment was to encourage the participants to leave their comfort zone and to collaborate and communicate with their peers online or offline. In the Designing, the participants continue to learn and try new tools to create multimodal compositions. Most participants described it as a good challenge that they never had had before. Moreover, being able to work with others broadened their horizons to see how they could design

a project from different perspectives. Roxanne honestly said her attitude toward group work changed after this class. Instead of being a *control freak*, she could see the possibility of using web 2.0 tools to create pleasant collaboration experiences.

To do the Designing in a technology-enhanced, multimodal, dialogical learning environment helped the participants to cultivate their communication, collaboration, creativity, and critical thinking ability. The participants' multimodal ensembles in the projects demonstrated the changes in the participants' awareness, skills, and attitudes toward their digital literacy practices and improvement in their 21<sup>st</sup>-century competences.

### **The Redesigned**

According to the New London Group (1996), the Redesigned is the finished product of individuals' work with a new meaning. In this study, the participants' multimodal ensembles were the examples of the Redesigned. As mentioned in the previous paragraph, all the projects done by the participants in class were the Redesigned for other individuals' Available Designs. This design cycle could keep going and hopefully it will be used in the participants' future workplaces.

**Products of the local and the global.** An interesting topic to discuss in the participants' Redesigned was the issue of the local and the global. In a strongly interconnected world today, each individual is situated in the local but in the global at the same time. This phenomenon is particularly obvious when individuals are engaged in the online world. However, only two participants in this study had experiences in web 2.0 publishing before. As described in their awareness of their digital literacy practices, most of the participants played the role of consumers rather than producers. When they heard about keeping a personal reflection blog, they showed a negative attitude toward it. Positioning themselves as blog readers, they thought publishing

posts on a blog was a boring digital literacy practice. On the contrary, the participants were pretty proud of positioning themselves as website developers in other projects. The web 2.0 publishing practices in this study allowed a few of the participants to experience the power of connecting themselves with the world merely by sharing their ideas. Therefore, the issue of the local and the global is discussed in this section. In addition, the participants' I-positions in the interconnection of local and global are discussed in this section as well.

The participants' Designing could be viewed as their digital literacy practices. They used various affordances of old technology and emerging technologies as their Available Designs to create multimodal ensembles with new meanings and knowledge to teach others. The targeted or imagined students in their projects were the students they were tutoring, their peers, or themselves in the past. This Designing had the original strength of privileging the local from the New Literacy Studies' perspective (Barton & Hamilton, 1998; Heath, 1983).

However, with the affordances of emerging technologies, what the participants published online would not be limited to the local. In agreement with this idea, the participants' Available Designs were not restricted to the information or resources they could get from the local. The interpersonal meanings created in their blogs were not limited to the local either. Brandt and Clinton (2002) pointed out that individuals' literacy practices in the technology era are usually not their new practices or creations. The literacy practices are always from others. This idea supports Bakhtin's (1981) assertion that words are always "half someone else's" (p. 293). The participants' Redesigned were not originally created but built upon other Available Designs with a new meaning.

For example, Kate and Marley appreciated that Roxanne played the role of a history expert in their Learning Adventure project about Rome to guide them through the Designing.

Coco and Molly let Keira be in charge of assembling the pieces for their Learning Adventure about Finding Nemo due to her previous learning experiences in the web service. Their final Redesigned never belonged to just one individual. Their Redesigned was created locally but presented with a global context. Anyone who has access to the Internet would be able to see their Redesigned and use in their classroom with their permission.

Another example was Roxanne's commercial project. She was extremely frustrated about making the commercial due to technical issues. Roxanne was always learning and trying new tools and was very creative. For her commercial project, she tried a new free video-editing tool. However, with the free version, she could not completely present her original idea. Therefore, she tried Jing and realized that Jing had its limitation as well. Finally, she settled down with MovieMaker. Nevertheless, MovieMaker did not record her sound no matter how many times she tried; therefore, she learned to use iMovie. After all these frustrations, she almost ran out of time and thus, she was not satisfied with her final product.

However, Roxanne came to talk to me with a big smile on her face a few days later. She was extremely excited about being contacted by the CEO of the software she had introduced in her commercial. The CEO complimented her creativity in the commercial, encouraged her to move forward as an ambitious educator, and promised that she would keep in touch with her. Posting her commercial on the blog connected her with a group of creative people in California. When she shared this with the whole class, the participants were amazed at the power of web publishing.

Knobel and Lankshear (2006) said, "weblogging is a local writing practice that can have global reach" (p.91). Roxanne's example demonstrated the interconnection between the local and the global. Roxanne represented herself as a creative individual pursuing a college degree in

a prestigious university; however, her artifact brought her to the global stage and thus created multiple possibilities for her various I-positions within the local community. Her project clearly exemplified the importance of a dialogical learning environment and addressed the central idea of the New Literacy Studies.

**I-positions in the multimodal Redesigned.** Most of the 13 participants who participated in the individual interview said that their original imagined audience for their blogs and projects were basically just their partner and their instructor, either Maggie or me. Baldwin and Holmes (1987) said the targeted audience was the private audience. Our utterances always address someone and expect a response (Bakhtin, 1981, 1986a, 1986b). According to Hermans and Hermans-Konopka (2010), there is always one or more hidden audience when individuals are having dialogues. In a dialogue, the self is a product fabricated through the discourse that he has with other individuals (Bakhtin, 1981; Bruner, 1991; Gee, 2008, Hermans & Dimaggio, 2007; Hermans & Hermans-Konopka, 2010; Hull & Kultz, 2006; Hull, Stornaiuolo & Sahni, 2010; Michael & Wortham, 2002; Wortham, 2001). In this study, the participants' hidden audience emerged over time.

In Roxanne's case, her hidden audience surprisingly contacted her. The CEO's presence influenced Roxanne's I-positions. Before the CEO contacted her, Roxanne positioned herself as a normal college student, a future history teacher, and a novice blogger. However, after receiving the tweet from the CEO, Roxanne realized people would read her blog and would reach out for her via other channels. This understanding changed Roxanne's I-positions. She positioned herself as an adventurer, who loved to try different web 2.0 tools, a successful novice blogger, and a not-so-normal college student who could be proud of herself. She still positioned

herself as a future history teacher, but she realized she needed to build up a professional image of a history teacher on her blog.

Sometimes when individuals develop I-positions, those I-positions will be the extended-I. When Hermans and Hermans-Konopka (2010) discussed the extended-I, they referred back to Bakhtin's (1984) idea of the author and the hero's self-consciousness. How an individual identifies himself with another person, or an object, or Mother Nature represents the idea of the extended-I. The idea of extended-I is a unified concept instead of a separation. By identifying the self with another person or an object, an individual sees himself in others and thus opens himself to the world (Hermans & Hermans-Konopka, 2010). In this study, several participants happily talked about seeing their education major classmates being so creative and passionate. When they were able to see others with these characteristics, these participants were actually aware of these characteristics in themselves and developed the extended-I.

For example, Julianne's experiences in collaborating with Joanna and Sonia helped her see how to view things from different perspectives, especially an educator's perspective. She said her personal learning experiences in this multimodal dialogical learning environment really opened her eyes to see many possibilities to be creative and innovative. Julianne was able to see herself as an educator like Joanna and Sonia. She mentioned that she might be able to use some of the teaching strategies and theories to design instructional materials to teach her future co-workers. Julianne's experience exemplified the idea of the extended-I.

### **A Teacher's Hat**

The last interpretation of the data is separated from the New London Group's idea of design, because it is worth discussing alone: the participants' I-position as a college student and as a future teacher. Even though I have redesigned the course materials to help college students

learn how they could integrate technologies for their personal learning, the participants still needed to think from a teacher's perspective to design instructional materials for others in some projects. Therefore, throughout the semester, the participants were switching between their role as a college student and their role as a teacher.

To put on a teacher's hat was a major challenge for most of the participants in this study because more than half of them were not education majors and had limited teaching experiences. As a result, most of the participants tried to remember the teachers they had had in their previous experiences. Some participants remembered their good teachers and what these good teachers did to help them learn. Some participants remembered how their bad teachers demotivated them to learn. Some participants did not remember their teachers but remembered what classroom activities they had done previously. Some non-education majors learned to observe their education major classmates. Their previous and current learning experiences played important roles in their I-position switching. However, what did the I-position switching between a future teacher and a current college student teach us about the participants' learning experiences in this technology-enhanced, multimodal, dialogical learning environment? I would like to use Gee's (2004) theory about educational games to explain the participants' growth.

According to Gee (2004), an individual will develop three types of identity when he is in an online game. The first one is a virtual identity, referring to the role the individual chooses to play in the game. The second one is the individual's real-world identity. The third one, the most critical but hardest to explain, is the projective identity. The key to explain this identity is the dual meanings of the word *project*, so this third identity has two positions. The first position is what you project on the virtual identity. It can be your beliefs, your values, your taste of fashion, and even your desires of your virtual identity. The second position is that you actually see the

virtual identity as a “*project* in the making, a creature whom I imbue with a certain trajectory through time based on my aspirations for what I want that character to be and become” (italics original, Gee, 2004, p112). I found these three identities that Gee used to analyze gamers interesting and applicable to what the participants in this study experienced.

To be consistent with the terminology, I would change the word identity in Gee’s theory to I-position to explain what my participants experienced in this study. All 33 participants shared the same real world I-position in general. They were all college students in a southeastern university in America, even though they majored in different fields. They also shared the same virtual I-position in this study; that is, the I-position as a teacher. Switching between these two I-positions made the participants create the projective I-position. They projected what they believed good teachers should be onto this third I-position. Therefore, they reflected on their previous experiences to pinpoint what they liked about good teachers. They also critiqued what they did not like and thus, they could see a desired teacher image.

At the same time, the participants were also in the Designing process to design instructional materials for their targeted or imagined students. Their virtual I-position as a teacher was in the making. This reminded me of the idea of *ideological becoming* from Bakhtin (1981). The *ideological becoming* emphasizes that the participants’ past and current experiences greatly impact the way they craft their virtual I-position as a future teacher. This projective I-position was an interwoven artifact in the participants’ hands.

When the participants switched back and forth between their I-positions as a college student and a future teacher in this technology-enhanced, multimodal, dialogical learning environment, they saw a clearer image of a good college student and a good teacher. Positioning themselves as students, they investigated what they really wanted and needed to have meaningful

learning experiences; positioning themselves as teachers, they realized what difficulties teachers might encounter and what considerations teachers needed to keep in mind. As Gee (2004) said, when the gamer took on the projective identity, the magic of seeing one's capacity, needs, and limitations happened. The participants in this study showed similar results. Once they took the projective I-position, they learned how effectively they could use educational technology to help them create, design, explore and represent their learning as a student and how important it would be to keep updated and creative with emerging technologies in their classroom. This environment served as a game field to help the participants understand each other more deeply.

### **Conclusion**

The technology-enhanced, multimodal, dialogical learning environment in the technology integration course was created and designed to help college students bring in their daily digital literacy practices to the academic setting. The purpose was to help the participants learn to transfer the knowledge of and skills in technology integration to their general learning. The participants showed that their awareness and skills in applying their daily digital literacy practices to completing academic tasks improved in this learning environment. Their attitude toward digital literacy practices also changed. Originally, they were doubtful about using their digital literacy practices for educational purposes. Their learning experiences in this environment made them see great potential and experience deep learning; therefore, the participants showed their beliefs in instructional technologies. At the same time, the participants also constructed many different I-positions. Each I-position they crafted helped them better understand themselves and each other. This technology-enhanced, multimodal, dialogical learning environment was a valuable challenge for the participants.

## CHAPTER 6

### CONCLUSION AND RECOMMENDATIONS

#### **Introduction**

There is no doubt that emerging technologies have become an integral part of people's everyday lives. Due to the burgeoning development of emerging technologies, education researchers care more today about the application of technologies to learning. Research findings show that digital natives' skills in using technology for educational purposes are below expectations (Bennett, Maton, & Kervin, 2008; Bennett & Matont, 2010; Gurung & Rutledge, 2014; Waycott, et al., 2010; Ng, 2012). This finding suggests the need to help digital natives develop the ability to effectively use technology not merely in their out-of-school digital literacy practices but also as a part of formal learning at school. The purpose of this study is to understand the impact of a technology-enhanced, multimodal, dialogical learning environment on 21<sup>st</sup>-century college students' awareness, skills, and attitudes as well as the construction of I-positions in their digital literacy practices.

Multimodality was used as the theoretical framework, the methodology and the method to help me delve into this phenomenon. In Chapter Four and Five, I have presented the data and provided detailed data analysis. In this chapter, I will briefly reiterate the key findings of this study, offer implications for practice and provide recommendations for future research.

## Summary of the Findings

With the focus on the participants' awareness, skills, and attitudes relating to their digital literacy practices, as well as their construction of I-positions, several interesting findings were drawn from this study.

### Awareness

At first, the participants had low awareness of educational technology and limited knowledge of emerging technology tools. Interestingly, when it came to technology, the participants did recall seeing their teachers use technology but they did not make the connection to personal learning. The most common functions of technology being used in education in the participants' minds were Google for everything, eLC for grades and assignment submission, and Microsoft Office suite for writing papers and creating "boring" presentations. On the other hand, they could give a long list of many software programs and applications that they used on a daily basis for fun. The participants showed limited awareness and knowledge of the possibilities and potential of using emerging technologies for educational purposes.

In addition, the participants had misconceptions about educational technology, even if they knew technology could be used to meet educational purposes. A few of them believed that teachers could be less effective than technology and that they were learning from technology alone. Some participants drew a blurry line between knowledge and information that they learned and acquired via technology. However, they were strongly aware of the benefits of using social media or social networks as communication tools in education and wondered why their professors still banned the use of social media in class.

After being in the technology-enhanced, multimodal, dialogical learning environment for one semester, the participants' awareness of using technology for personal learning increased,

and they admitted that their lack of knowledge in emerging technologies would be the biggest hindrance for them in terms of using technology to meet educational purposes.

### **Skills**

In addition to their low awareness of educational technology, the participants were not skilled in the use of educational technology. Their ownership of multiple devices did not mean that they were taking advantage of the devices or software programs in order to improve their learning. Their self-evaluation and performances in their projects and their reflection blog posts demonstrated their basic skills in using technology to construct knowledge and to make meaning for their studies.

Even though this course was about technology integration, the participants learned many theories and tools related to this topic. However, the participants still expressed that this learning environment was helpful because they had the opportunities to fully explore the possibilities of instructional technologies with their peers. Observing each other, seeing each other's final products, and discussing with and giving feedback to each other proved helpful for them to keep moving forward with baby steps.

### **Attitudes**

Some of the participants' attitudes toward their digital literacy practices were described in their misconceptions about technology use for educational purposes. They were surprised when they realized that they had those misconceptions. Some of the participants held a neutral attitude toward applying their daily digital literacy practices to personal learning due to their low level of awareness. However, some participants did have a negative attitude. Keeping a personal reflection blog was a good example. Only a few participants had blogging experiences before, but almost all of them showed no interest when they learned that they needed to keep a blog. A

few participants honestly expressed that the blogging practice was better than they originally thought in the interviews and considered it a good challenge for them to cultivate their digital literacy skills.

The participants' experiences in the technology-enhanced, multimodal, dialogical learning environment were challenging but helpful. This experience changed their attitudes toward using the daily digital literacy practices to meet educational purposes.

### **I-positions**

The technology-enhanced, multimodal, dialogical learning environment provided physical and online learning spaces. Individuals' I-positions develop with time and space. Therefore, the participants constructed several I-positions in this study and I divided them into two main categories. The first one was the I-positions in others' eyes. In this category, each participant positioned himself or herself as a normal college student, a responsible student, a professional blogger, a storyteller, or a different option. They constructed multiple I-positions in their projects and on the reflection blog. All these I-positions were the reflection of themselves in other people's eyes. These I-positions could help the participants be more motivated and engaged in learning.

Among all these I-positions, the most common one was the I-position of a professional. The participants deeply wanted others to see themselves as professionals. This common I-position reflected what dialogical self theory asserts: that self positioning is a unity of social position and personal position. When individuals are aware of this unity, they would be more sensitive to the social context that they are in (Hermans, Hermans-Konopka, 2010). When they keep dialogue within the community to which they belong, the internalization of the dialogue

will help individuals develop responsive understanding in themselves and others (Bakhtin, 1981).

The second category was I-as a teacher or I-as a student. As discussed in the previous chapter, the switch between these two I-positions created the projective I-position and thus helped the participants see the capacities and limits that teachers and students have. Once the participants could craft this projective I-position, they realized the true meaning of learning and became more engaged.

### **Implications**

Technology integration has been a critical issue in education in the past decade. With the rapid advancement of emerging technologies, this issue will only become more and more important. When educators integrate technology into classrooms, the purpose is to benefit the learner, to help them learn new skills or competencies, and to help them construct knowledge. My data suggested that 21<sup>st</sup>-century college students had low awareness of and skills in the use of technology for their learning. Educators need to help 21<sup>st</sup>-college students be aware of the possibilities of using emerging technologies effectively to create significant learning experiences. Instead of being engaged in technology-based activities out of school, 21<sup>st</sup>-century learners need to be taught how to transfer their skills in daily digital literacy practices to academic contexts. As a result, educators should be facilitators and offer assistance to help students gradually learn how to use technology for personal learning. Furthermore, a course about technology integration might be a solution to this need.

However, the participants in this study also drew my attention to educators' awareness, skills, and attitudes relating to digital literacy practices. Before educators help 21<sup>st</sup>-century learners become aware of the potential and possibilities of effectively integrating technology into

their learning, educators need to open their arms to welcome students' out-of-school digital literacy practices. For example, the participants in my study were disappointed to see that the use of social media in higher education was still restricted most of the time. They honestly acknowledged that social media could be a distraction; however, instructors might benefit from it when they opened their minds to integrate them effectively into their instruction.

In one of the assigned reading materials to my participants, Howland, Jonassen, and Marra (2012) indicated that the critical elements for meaningful learning are being intentional, active, constructive, cooperative, and authentic. Students' out-of-school digital literacy practices offer a much better learning environment for the possibility of meaningful learning to happen. For example, the participants in my class were highly engaged in the AR game. Even though there was a design flaw that rendered some participants unable to participate in the game, they were still engaged and tried very hard to solve the problem. Learners in the 21<sup>st</sup> century prefer to be players than spectators. Gurung and Rutledge (2014) also recommended that higher education instructors should not constrain college students' use of emerging technologies that they were already familiar with.

In addition to being open-minded to emerging technologies, educators need to change their pedagogical strategies and approaches. Traditional ways of teaching definitely do not engage students, and merely transferring paper-based instruction to screen-based instruction does not result in effective technology integration. The participants' redesign of their assignments and class presentations showed their demand and desire of more interactivity with the instructor, their peers and even the texts. Engaging technology-based activities are what 21<sup>st</sup>-century learners need for meaningful learning. Therefore, faculty professional development for effective technology integration should be a top priority in higher education.

The last implication for practice is connected with faculty professional development. That is, I invite for higher education instructors to create a technology-enhanced, multimodal, dialogical learning environment. It does not have to last throughout the semester. It does not need to be in the physical classroom. With the affordances of emerging technologies, it is not a difficult task to create such a learning environment online. It is possible to redesign a class presentation from a monologue to a dialogue by asking more questions or having discussion and debate over the topics. Give students opportunities to create artifacts that can show their understanding instead of only assigning papers in black and white. After they create artifacts, give students the opportunity to see each other's works. A multimodal, dialogical classroom, even without emerging technologies, can be a great opportunity for students to engage with learning materials and it can help students see the purpose of learning; that is, to apply the knowledge to their daily lives.

### **Recommendation for Future Research**

As indicated in the implications, future research can focus on investigating faculty's awareness, skills, and attitudes relating to their digital literacy practices. Emerging technologies have already changed almost every aspect of individuals' lives. We think differently, organize our daily routine differently, and interact with others differently. These are not privileges that strictly belong to the younger generation. It is also important to examine how faculty members can transfer their awareness, skills, and attitudes relating to their daily digital literacy practices to their academic performances. Furthermore, it will be significant to see how faculty members' transference of digital literacy practices might impact their teaching and their students' learning.

Another research focus could be on the differences in students' background or previous learning experiences with the aid of technology. In this study, only two participants had much

more advanced learning experiences with technology in high school. Several participants told me during the individual interviews that they had minimal learning experiences with the aid of technology before this class. They came from rural areas where technology integration was highly recommended but hardly practiced.

In general, their performances in class were not much different. However, their attitude changes showed minor differences. The participants with advanced technological knowledge and skills felt more adventurous and were more likely to come out of their comfort zone and tried new programs. On the other hand, the participants who had limited experiences with technology preferred to stay with what they were familiar with. However, the first group of participants gave lower self-evaluations when they examined their performances in this course while the latter evaluated themselves with salient improvement. The participants positioned themselves differently due to the differences in their previous experiences with technology. Therefore, I am interested in further investigating students' constructions of I-positions related to their previous and current experiences.

Other lines of research can focus on using another theoretical framework, Actor Network theory, to understand the impact of a technology-enhanced, multimodal, dialogical learning environment on 21<sup>st</sup>-century college students' digital literacy practices. I came across this theory after I redesigned the course. At that moment, it would have been hard for me to consider this study with a new theoretical framework. However, the focus on the interaction between actor and actant might provide different insights on the participants' I-positions and the changes in their awareness, skills, and attitudes relating to digital literacy practices.

## **Plan on Publication**

The data I collected in this study really helped me develop a clear understanding of 21<sup>st</sup>-century college students' learning progressions and changes when they were exposed to a technology-enhanced, multimodal, dialogical environment. The data provided an insight into the theories and research methodology as well as practical pedagogical strategies for tertiary level instructors to help digital natives bring in their out-of-school literacy into their formal learning. Therefore, I plan to work on publications regarding technology integration in teacher education, course design, qualitative research methods, and dialogism.

For the technology integration in teacher education, I plan to focus on the data collected from the pre-service teachers in this study. Their growth relating to their awareness, skills, and attitudes toward technology integration for educational purposes will be discussed. This piece of data can be submitted to the Journal of Technology and Teacher Education or Teaching and Teacher Education.

The participants' reflections on their experiences in the technology-enhanced, multimodal, and dialogical learning environment can be discussed for the publication prepared for the British Journal of Educational Technology. One of their foci is on the curriculum development and course design; therefore, I want to discuss the adoption of the New London Group's idea of design for the technology-enhanced, multimodal, dialogical learning environment as well as the influences on college students' learning.

Except for the major focus on educational technology, I think it is worthwhile to further discuss the experiences of using multimodality as a theoretical framework, a research methodology, and a data collection method. Multimodality has become an unavoidable trend in meaning-making. Therefore, it is important to see how individuals create multimodal ensembles

in their personal teaching and learning process. I will work on the publication for Qualitative Inquiry or the International Journal of Qualitative Methods to continue the discussion of using multimodality as a research methodology.

The last publication that I will prepare is for the International Journal for Dialogical Science. Dialogical self theory originated from the psychology field. Using dialogical self theory in educational studies is still in its infancy. Therefore, the findings of keeping personal reflections on blogs and the role-switching in the design and personal learning process in this study will be interesting to other educators. I will work on a publication relating to this topic to help educators and researchers see the potential of keeping personal reflection blogs in the learning process and expect to keep dialogues going on for new ideas.

### **Conclusion: Mandy's Story**

Mandy enrolled in my class while I was conducting the pilot study in Spring Semester 2013. She did many outstanding projects individually and collaboratively with her peers. She graduated after that semester, but we kept in touch on Facebook. Recently I got a message from her on Facebook that included a link to a YouTube video. She told me that her friend wrote the song and asked her to direct the music video for him. After listening to him singing, Mandy did not hesitate and started to work on the storyboard. The final product is a slow animation music video that vividly presents the songwriter's idea of the struggle of minority groups for equality throughout American history. Mandy told me that what she learned from me about storytelling and the skills she had learned in making slow animation immediately came to her mind when she was listening to her friend singing. The video turned out well, and she and her friends considered it to be a masterpiece. They received a lot of compliments and feedback. Mandy's story demonstrated my expectation of adopting the New London Group's idea of design. A

small change happens in an individual's life, and then this individual will have the impact on a bigger change that might become a social change. Mandy said she just wanted to let me know that my class and I personally have had great impact on her. I was very touched by Mandy's words and also by her music video. It is an unexpected gift, but the best kind for a teacher.

It is my hope that college students can gain significant learning experiences not merely to prepare them for the future workplace but also to develop into global citizens who care about the local and global communities to which they belong. It is also my hope to see them become active users of emerging technologies who can better communicate and collaborate with others rather than becoming gadgets themselves. I believe it is possible to help students become active global citizens when they learn to transfer what they learned in this kind of technology-enhanced, multimodal, dialogical learning environment to their profession. The experience in the learning environment can be extremely challenging, as my participants told me it was, but it will also be a good challenge. Furthermore, it will have lifelong impact just as what Mandy demonstrated.

## REFERENCES

- Bakhtin, M. M. (1981). Discourse in the novel. In M. Holquist (Ed.), *The dialogic imagination: Four essays by M. M. Bakhtin*. (C. Emerson and M. Holquist, Trans.). Austin, TX: University of Texas Press.
- Bakhtin, M. M. (1984). Discourse in Dostoevsky. In C. Emerson (Ed.), *Problems of Dostoevsky's poetics*. (C. Emerson, tran.). Minneapolis, MN: University of Minnesota Press.
- Bakhtin, M. M. (1986a). The problem of speech genres. In C. Emerson and M. Holquist (Eds.), *Speech genres and other late essays*. (V. W. Mcgee, Tran.). Austin, TX: University of Texas Press.
- Bakhtin, M. M. (1986b). The problem of the text in linguistics, philology, and the human sciences: An experiment in philosophical analysis. In C. Emerson and M. Holquist (Eds.), *Speech genres and other late essays*. (V. W. Mcgee, Tran.). Austin, TX: University of Texas Press.
- Baldwin, M. W. & Holmes, J. G. (1987). Salient private audiences and awareness of the self. *Journal of Personality and Social Psychology*, 52, 1087-1098.
- Bandura, A. (2008). Toward an agentic theory of the self. In H. W. Marsh, R. G. Craven, & D. M. McInerney (Eds.), *Self-processes, learning, and enabling human potential: Dynamic new approaches* (pp. 15-49). Charlotte, NC: Information Age Publishing.
- Barton, D. & Hamilton, M. (1998). *Local literacies: Reading and writing in one community*. London, UK: Routledge.

- Brandt, D., & Clinton, K. (2002). Limits of the local: Expanding perspectives on literacy as a social practice. *Journal of Literacy Research, 34*(3), 337-356.
- Bennett, S. & Matont, K. (2010). Beyond the 'digital natives' debate: Towards a more nuanced understanding of students' technology experiences. *Journal of Computer Assisted Learning, 26*, 321-331.
- Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology, 39*(5), 775-786.
- Bezemer, J. & Jewitt, C. (2010). Multimodal analysis: Key issues. In L. Litosseliti (Ed.), *research methods in linguistics* (pp. 180-197). London, UK: Continuum International Publishing Group.
- Bruner, J. (1991). Self-making and world-making. *Journal of Aesthetic Education, 25*(1), 67-78.
- Cope, B. & Kalantzis, M. (2000). Designs for social futures. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 203-234). New York, NY: Routledge.
- Cuban, L. (1986). *Teachers and machines: The classroom use of technology since 1920*. New York, NY: Teachers College Press.
- Dewey, J. (1938). *Experience and education*. Toronto: Collier-Macmillan Canada Ltd.
- Duffy, T. M. & Jonassen, D. H. (1992). Constructivism: New implications for instructional technology. In T. M. Duffy & D. H. Jonassen (Eds.), *Constructivism and the technology of instruction: A conversation* (pp. 1-16). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Freire, P. & Macedo, D. (1987). *Literacy: Reading the word and the world*. South Hadley, MA: Bergin & Garvey Publishers.

- Gee, J. P. (1996). *Social linguistics and literacies: Ideology in Discourses (2<sup>nd</sup> Edition)*. London, UK: Routledge.
- Gee, J. (1999). The new literacy studies and the “social turn”. ERIC Document Reproduction Service No. ED442118.
- Gee, J. (2000). Teenagers in new times: A new literacy studies perspective. *Journal of Adolescent & Adult Literacy*, 43(5), 412.
- Gee, J. (2004). *Situated language and learning: A critique of traditional schooling*. New York, NY: Routledge.
- Gee, J. P. (2008). *Social linguistics and literacies: Ideology in Discourses (3<sup>rd</sup> Edition)*. London, UK: Routledge.
- Greenhow, C., Robelia, B. & Hughes, J. E. (2009). Learning, teaching and scholarship in a digital age: Web 2.0 and classroom research: What path should we take now? *Educational Researcher*, 38(4), 246-259.
- Gurung, B & Rutledge, D. (2014). Digital learners and the overlapping of their personal and educational digital engagement. *Computers & Education*, 77, 91-100.
- Halliday, M. A. K. (1978). *Language as social semiotic: The social interpretation of language and meaning*. London, UK: Edward Arnold.
- Halverson, E. R., Bass, M., Woods, D. (2012). The process of creation: A novel methodology for analyzing multimodal data. *The Qualitative Report*, 17. Retrieved from <http://www.nova.edu/ssss/QR/QR17/halverson.pdf>
- Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies*, 17(1), 13-26.

- Hannafin, M. J. (1989). Interaction strategies and emerging instructional technologies: Psychological perspectives. *Canadian Journal of Educational Communication*, 18, 167-179.
- Hannafin, M. J. (1992). Emerging technologies, ISD, and learning environments: Critical perspectives. *Educational Technology Research and Development* 40(1), 49-63.
- Hannafin, M. J. & Land, S. M. (1997). The foundations and assumptions of technology-enhanced student-centered learning environments. *Instructional Science*, 25, 167-202.
- Heath, S. B. (1983). *Ways with words: Language, life, and work in communities and classrooms*. Cambridge, UK: Cambridge University Press.
- Hermans, H. J. M. & Dimaggio, G. (2007). Self, identity, and globalization in times of uncertainty: A dialogical analysis. *Review of General Psychology* 11(1), 31-61.
- Hermans & Hermans-Konopka, (2010). *Dialogical self theory*. Cambridge, UK: Cambridge University Press.
- Howe, N. & Strauss, W. (2000). *Millennials rising: The next great generation*. New York, NY: Vintage.
- Howland, J. L., Jonassen, D., & Marra, R. M. (2012). *Meaningful learning with technology*. Boston, MA: Allyn & Bacon.
- Hull, G. A. & Katz, M-L. (2006). Crafting an agentive self: Case studies of digital storytelling. *Research in the Teaching of English*, 41(1), 43-81.
- Hull, G. A & Nelson, M. V. (2005). Locating the semiotic power of multimodality. *Written Communications*, 22(2) 224-261.
- Hull, G. A. & Schultz, K. (2001). Literacy and learning out of school: A review of theory and research. *Review of Educational Research* 71(4), 575-611.

- Hull, G. A., Stornaiuolo, A., & Sahni, U. (2010). Cultural citizenship and cosmopolitan practice: Global youth communicate online. *English Education* 42(4), 331-367.
- Jewitt, C. (2008). Multimodality and literacy in school classrooms. *Review of Research in Education*, 32, 241-267.
- Jewitt, C. (2009a). Introduction: Handbook rationale, scope and structure. In C. Jewitt (Ed.), *Routledge handbook of multimodal analysis* (pp. 1-13). New York, NY: Routledge.
- Jewitt, C. (2009b). An introduction to multimodality. In C. Jewitt (Ed.), *Routledge handbook of multimodal analysis* (pp. 14-39). New York, NY: Routledge.
- Jewitt, C. & Kress, G. (2003). *Multimodal literacy*. New York, NY: Peter Lang Publishing.
- Jonassen, D. & Reeves, T. (1996). Learning with technology: Using computers as cognitive tools, in D. Jonassen, (Ed.), *Handbook of research on educational communication and technology* (pp.693-719). New York, NY: Scholastic.
- Kennedy, G., Judd, R., Dalgarno, B., & Waycott, J. (2010). Beyond natives and immigrants: exploring types of net generation students. *Journal of Computer Assisted Learning*, 26, 332-343.
- Knobel, M. & Lankshear, C. (2006). Weblog worlds and constructions of effective and powerful writing: Cross with care, and only where signs permit. In K., Pahl & J. Rowsell (Eds.), *Travel notes from the new literacy studies: Instances of practice* (pp. 72-92). Clevedon: Multilingual Matters Ltd.
- Kress, G. (2000). Multimodality. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 153-161). New York, NY: Routledge.
- Kress, G. (2003). *Literacy in the new media age*. New York, NY: Taylor & Francis Group.

- Kress, G. (2004). Reading images: Multimodality, representation and new media. *Information Design Journal & Document Design*, 12(2), 110-119.
- Kress, G. (2009). What is mode? In C. Jewitt (ed.), *The Routledge handbook of multimodal analysis* (pp. 54-67). New York, NY: Routledge.
- Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. New York, NY: Routledge.
- Kress, G. & van Leeuwen, T. (1996). *Reading images: The grammar of visual design*. London, UK: Routledge.
- Kress, G. & van Leeuwen, T. (2001). *Multimodal discourse: the modes and media of contemporary communication*. New York, NY: Oxford University Press.
- Lankshear, C. & Knobel, M. (2006). *New literacies: Everyday practices and classroom learning*. New York, NY: Open University Press.
- Lankshear, C. & Knobel, M. (2007). Sampling “the new” in new literacies. In C. Lankshear & M. Knobel (Eds.), *A new literacies sampler* (pp.1-24). New York, NY: Peter Lang.
- Lankshear, C. & Knobel, M. (2009). *New literacies: Everyday practices and classroom learning* (2<sup>nd</sup> Edition). Buckingham, UK: Open University Press.
- Leggo, C. (2008). The ecology of personal and professional experience: A poet’s view. In M. Cahnmann-Taylor & R. Siegesmund (Eds.), *Art-based research in education: Foundations for practice* (pp. 89-98). New York, NY: Taylor & Francis.
- Lorenzo, G. & Dziuban, C. (2006). Ensuring the Net generation is net savvy. Retrieved from <http://mysite.pratt.edu/~sla/attachments/NetSavvy.pdf>
- Lorenzo, G., Oblinger, D., & Dziuban, C. (2007). How choice, co-creation, and culture are changing what it means to be net savvy. *Educause Quarterly*, 30, 6-12.

- Marsh, J. (2006). Global, local/ public, private: Young children's engagement in digital literacy practices in the home. In K., Pahl & J. Rowsell (Eds.), *Travel notes from the new literacy studies: Instances of practice* (pp. 19-38). Clevedon: Multilingual Matters Ltd.
- Martinec, R. & Salway, A. (2005). A system for image-text relations in new (and old) media. *Visual Communications*, 4(3), 337-371.
- Mavers, D. (2009). Student text-making as semiotic work. *Journal of Early Childhood Literacy*, 9(2), 145-160.
- Michael, A. A. & Wortham, S. (2002). Clearing away the self. *Theory and Psychology*, 12(5), 625-650.
- New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60-92.
- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers and Education*, 59(3), 1065-1078.
- Oblinger, D. G., & Oblinger, J. L. (Eds.). (2005). *Educating the Net generation*. Boulder, CO: Educause.
- Pahl, K. & Rowsell, J. (Eds.). (2006). *Travel notes from the new literacy studies: Instances of practice*. Clevedon: Multilingual Matters Ltd.
- Partnership for 21<sup>st</sup> Century Learning, (2015a). *Framework for 21<sup>st</sup> century learning*. Retrieved from [http://www.p21.org/storage/documents/P21\\_framework\\_0515.pdf](http://www.p21.org/storage/documents/P21_framework_0515.pdf)
- Partnership for 21<sup>st</sup> Century Learning, (2015b). *P21 framework definitions*. Retrieved from [http://www.p21.org/storage/documents/docs/P21\\_Framework\\_Definitions\\_New\\_Logo\\_2015.pdf](http://www.p21.org/storage/documents/docs/P21_Framework_Definitions_New_Logo_2015.pdf)

- Pink, S. (2004). Introduction: situating visual research. In S. Pink., L. Kurti., & A. I. Afonso, (Eds.), *Working images: Visual research and representation in ethnography* (pp. 1-12). London, UK: Routledge.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-6.
- Raggatt, P. T. F. (2006). Multiplicity and conflict in the dialogical self: A life-narrative approach. In D. P. McAdams, R. Josselson, & A. Lieblich (Eds.), *Identity and story: Creating self in narrative*. Washington D.C, American Psychological Association.
- Reiss, D. & Young, A. (2013). Multimodal composition, appropriation, remediation, and reflection: Writing, literature, and media. In T. Bowen & C. Whithaus (Eds.), *Multimodal literacies and emerging genres* (pp. 164-182). Pittsburgh, PA: University of Pittsburgh Press.
- Reeves, T. (2011). Can educational research be both rigorous and relevant? *Educational Designer*, 1(4). Retrieved from <http://www.educationaldesigner.org/ed/volume1/issue4/article13/>
- Schultz, K. & Hull, G. (2008). Literacies in and out of school in the United States. In B. Street & N. H. Hornberger (Eds.), *Encyclopedia of language and education*, Vol 2: Literacy (2<sup>nd</sup> edition) (pp. 239-249). New York, NY: Springer.
- Scribner, S. & Cole, M. (1981). *The psychology of literacy*. Cambridge, MA: Harvard University Press.
- Sharma, P. & Hannafin, M. J. (2007). Scaffolding in technology-enhanced learning environments. *Interactive Learning Environments*, 15(1), 27-46.
- Stein, P. & Slonimsky, L. (2006). An eye on the text and an eye on the future: Multimodal literacy in three Johannesburg families. In K., Pahl & J. Rowsell (Eds.), *Travel notes from*

- the new literacy studies: Instances of practice* (pp. 118-146). Clevedon: Multilingual Matters Ltd.
- Stone, J. C. (2007). Popular websites in adolescents' out-of-school lives: Critical lessons on literacy. In C. Lankshear & M. Knobel (Eds.), *A new literacies sampler* (pp.49-65). New York, NY: Peter Lang.
- Street, B. (1984). *Literacy in theory and practice*. Cambridge, UK: Cambridge University Press.
- Street, B. (1998). New literacies in theory and practice: What are the implications for language in education? *Linguistics and Education*, 10(1), 1-24.
- Street, B. (2001). Introduction. In B. Street (ed.), *Literacy and development: Ethnographic perspectives*. London, UK: Routledge.
- Street, B. (2003). What's new in new literacy studies. *Current Issues in Comparative Education*, 5(2), 1-14.
- Street, B., Pahl, K. & Rowsell, J. (2009). Multimodality and New Literacy Studies. In C. Jewitt (Ed.), *The Routledge handbook of multimodal analysis* (pp. 191-200). New York, NY: Routledge.
- Tapscott, D. (1998). *Growing up digital: The rise of the Net generation*. New York, NY: McGraw-Hill.
- Taylor, E. W. (2002). Using still photography in making meaning of adult educator's teaching beliefs. *Studies in the Education of Adults*, 34(2), 123-139.
- Thompson, P. (2013). The digital natives as learners: Technology use patterns and approaches to learning. *Computers & education*, 65, 12-33.
- Technology in School Task Force, (2003). *Technology in schools: Suggestions, tools, and guidelines for assessing technology in elementary and secondary education*. Washington,

DC: National Center for Educational Statistics. Retrieved from

<http://nces.ed.gov/pubs2003/2003313.pdf>

- van Leeuwen, T. (2011). Multimodality and multimodal research. In E. Margolis & L. Pauwels (Eds.), *Sage Handbook of visual research methods* (pp. 549-569). Thousand Oaks, CA: Sage.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. (Ed. by M. Cole, V. John-Steiner, S. Scribner, & E. Souberman). Cambridge, MA: Harvard University Press.
- Warschauer, M. (2010). Digital literacy studies: Progress and prospects. In M. Baynham & M. Prinsloo (Eds.), *The future of literacy studies* (pp. 123-140). Houndmills, Basingstoke, UK: Palgrave Macmillan.
- Waycott, J., Bennett, S., Kennedy, G., Dalgarno, B., Gray, K. (2010). Digital divides? Student and staff perceptions of information and communication technologies. *Computers & Education, 54*, 1202-1211.
- Windschitl, M. (1998). The WWW and classroom research: What path should we take? *Educational Researcher, 27*(1), 28-33.
- Wortham, S. (2000). Interactional positioning and narrative self-construction. *Narrative Inquiry, 10*, 157-184.
- Wortham, S. (2001). *Narratives in action: A strategy for research and analysis*. New York, NY: Teachers College Press.

## APPENDICES

### APPENDIX A: IRB APPROVAL PROTOCOL

**The University of Georgia**

Office of The Vice President for Research  
DHHS Assurance ID No.: FWA00003901

Institutional Review Board  
Human Subjects Office  
612 Boyd GSRC  
Athens, Georgia 30602-7411  
(706) 542-3199  
Fax: (706) 542-3360  
www.ovpr.uga.edu/hso

#### APPROVAL FORM

Date Proposal Received: 2013-05-15

Project Number: 2013-10967-0

Name	Title	Dept/Phone	Address	Email
Dr. Michael A. Orey	PI	Educational Psychology and Instructional Technology Aderhold Hall 603b 542-4028	706-202-2428	mikeorey@uga.edu
Szu-Yueh Chien	CO	Educational Psychology 626 C Aderhold 608-332-9140		schien2@uga.edu

Title of Study: The digital self-identity construction as a 21st century learner, educator and global citizen in college

45 CFR 46 Category: Administrative 2 | 1  
Parameters:  
None;

Change(s) Required for Approval:  
Revised Application;  
Revised Consent Document(s);

Approved : 2013-07-09    Begin date: 2013-07-09    Expiration date : 2018-07-08

*NOTE: Any research conducted before the approval date or after the end date/collectible data is not covered by IRB approval, and cannot be retroactively approved.*

Number Assigned by Sponsored Programs:

Funding Agency:

Your human subjects study has been approved.

Please be aware that it is your responsibility to Inform the IRB:

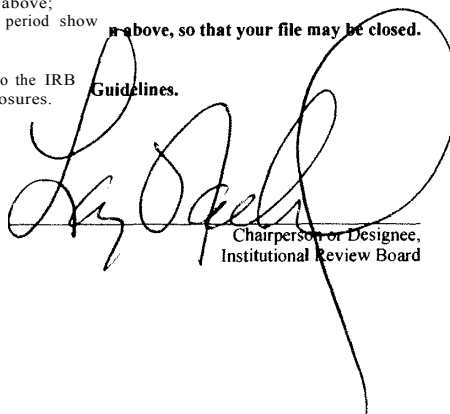
- of any adverse events or unanticipated risks to the subjects or others within 24 to 72 hours;
- of any significant changes or additions to your study and obtain approval of them before they are put into effect;
- that you need to extend the approval period beyond the expiration date shown above;
- that you have completed your data collection as approved, within the approval period shown above, so that your file may be closed.

For additional information regarding your responsibilities as an investigator refer to the IRB

Use the attached Researcher Request Form for requesting renewals, changes, or closures.

Keep this original approval form for your records.

**Guidelines.**



Chairperson or Designee,  
Institutional Review Board

## APPENDIX B: PARTICIPANT CONSENT FORM

I, \_\_\_\_\_, agree to participate in a research study titled " The Digital Self-Identity Construction As A 21st Century Learner, Educator And Global Citizen In College" conducted by Szu-Yueh Chien from the Department of Educational Psychology and Instructional Technology at the University of Georgia under the direction of Dr. Michael Orey, Department of Educational Psychology and Instructional Technology, University of Georgia. I understand that my participation is voluntary. I can refuse to participate or stop taking part at anytime without giving any reason, and without penalty or loss of benefits which I may otherwise be entitled. If I decide to withdraw from the study, the information that can be identified as mine will be kept as part of the study and may continue to be analyzed, unless I make a written request to remove, return or destroy the information. My decision whether or not to participate in this research will not influence my grades, class standing or relationship with my edit 2000 instructor(s).

The reason for this study is to understand the construction of college students' self-identities while using multiple technology tools and how these identities influence their learning in this global village. If I agree to participate in the research, the researchers will ask me to allow them to make copies of my EDIT 2000 assignments and reflection journals to be used in the research and to take part in a 30-60 minutes audio-recorded interview about my reflections on the development of my digital self. After my interview, the researchers may contact me for a 20-30 minute follow-up meeting to ask any clarifying questions about information from my interview and/ or my reflection journals. If I agree to take part in the 30-60 minutes audio-recorded interview about my reflections on the construction of my digital multiple identities, I will be interviewed after I get my grades in EDIT2000.

This study may help me reflect on my own learning and the construction of my digital identities in this social world with the assistance of advanced technologies. This research study also aims to help college instructors, especially instructors who teach technology integration courses, to help college students develop identities as a 21<sup>st</sup> century learner, educator and global citizen.

There are no foreseeable risks or discomforts associated with the research tasks beyond what they may experiences as part of the class. My participation id voluntary and I can choose not to share my course materials for research purposes. If I agree to participate in the interview, I can skip any question I do not want to answer. No individually-identifiable information collected about me will be shared with others without my written permission, unless otherwise required by law. The audio recordings will be destroyed when the transcription is done.

The researcher will answer any questions about the research now, or during the course of the project, and can be reached by telephone at 608-332-9140 or email at [schien2@uga.edu](mailto:schien2@uga.edu). I may also contact the professor supervising the research, Dr. Michael Orey, at 706-542-4028 or [mikeorey@uga.edu](mailto:mikeorey@uga.edu).

I am willing to participate in the audio-recorded interview after the instructors submit the final grade.

Circle one: YES / NO. Initial \_\_\_\_\_.

I understand that I am agreeing by my signature on this form to take part in this research project and understand that I will receive a signed copy of this consent form for my records.

\_\_\_\_\_  
Name of Participant                      Signature of Participant                      Date

\_\_\_\_\_  
Name of Researcher                      Signature of Researcher                      Date

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

## **APPENDIX C: INTERVIEW PROTOCOL**

### **College Students' Identities Construction with the Use of Technologies Semi-structured Interview Protocol**

1. What is your major?
2. Is this class your first class about using technologies in learning? If not, what are the other classes you took before?
3. What did you learn in those classes?
4. What do you think of using Web 2.0 technologies in your life?
5. If you can rate from 1 to 10, how important would it be to use technologies in your life?
6. Have you tried to use technology to help you learn before? If yes, what kind of technology did you use? And for what kind of learning?
7. How comfortable would you be to use Web 2.0 technologies in your life? From 1 to 10.
8. Do you intend to use more web 2.0 technologies? What kind of web 2.0 technologies will you use?
9. What do you view as the advantages of using Web 2.0 technologies?
10. Do you think people, including your friends, students, colleagues, administrators, parents, would influence your use of Web 2.0 technologies? Why or why not? And how will they influence your use of technologies?
11. Except for people, what other factors do you think that would influence your use of Web 2.0 technologies?
12. What factors or circumstances would facilitate or hinder the use of Web 2.0 technologies in your life? Why?
13. How do you perceive yourself when you use technologies?
14. How do you perceive yourself when you use technologies for learning?
15. Do you think that technology give you more opportunity to explore the world and communicate with more people? What strategies have you used? What did you learn in those communications?

## APPENDIX D: SAMPLE READING MATERIALS

### 5<sup>th</sup> Reflection: Games In 21<sup>st</sup> Century Teaching And Learning

#### MATERIALS:

When it comes to games in education, you can not miss these two masters!

[Jim Gee on the Use of Video Games for Learning about Learning](#)

[Kurt Squire on Civic Engagement Through Digital Games](#)

And here is a teacher doing what they suggest!

[Why Teachers Use Digital Games and Why Schools Teach Gaming](#)

#### REQUIREMENTS:

Please reflect on the articles/ videos and answer the following guiding questions. Write at least 2-3 paragraphs and create images (taking picture or draw pictures) or other artifacts to support your ideas.

- Not merely computer games, is there a game that teaches you a lot of things? What is the game? What did you learn? Why do you think the game helps?
- Why is gaming so popular in 21<sup>st</sup> century learning and teaching in your opinion?
- How can you use the idea of gaming to help yourself or others learn in 21<sup>st</sup> century learning?
- If you are an education major, please tell us what you think about gaming before and after reading the materials. Also, will you choose to use games in your future instruction? Why or why not?

## APPENDIX E: SAMPLE PROJECT

### EXPAND YOUR LEARNING CIRCLE PROJECT

This project is asking you to redesign an assignment or a presentation you have in another class (or this class) with creativity. Think about this...is there one project/assignment that you feel that you want to do it another way? Or is there a project that you think “Oh, what if we do it with the help of technology?” Or, is there a boring PPT presentation? Start to think about ONE assignment in another course (or this class) and think about doing it with the help of technology...it might be that you want to make a digital poster, or an infographics, or use Vine to make a short instructional video...

For example, you are taking a food nutrition class. Then you can create something similar to [the infographics on this website](#) to tell people to decrease the intake amount of sugar. Or you want to create a digital poster...then try what Amanda recommended in her commercial– the Glogster. Or there is a bad PPT presentation made by a professor...that PPT is out-of-dated and not visually appealing at all. So you want to re-design it for him/her.

Just think about what assignment you want to redesign and what can be the alternative way with the help of technology.

You need to provide the previous bad example and your re-designed product to show us the contrast.

## APPENDIX F: SAMPLE RUBRIC

### RUBRIC FOR “EXPAND YOUR LEARNING CIRCLE” PROJECT

Name:

	Points Possible	Your Grade
Provided Description of the Old Assignment	15%	
Description of the Part of the Old Assignment that You Don't Like (How do you think about yourself as a learner?)	20%	
Creativity (found originality and novelty; give examples)	30%	
Description of Your New Design (Why is it better? How is this helpful for you and your classmates? How do you see yourself in the new design?)	20%	
Timeliness (Finish the Project by April 8)	15%	

Creativity means whether this re-design:

1. Transforms ideas into a new form
2. Incorporates new directions or approaches to the assignment in the final product
3. Considers new directions or approaches
4. Connects ideas in a novel ways
5. Have unique ideas
6. Add your own definition of creativity for the re-design

## **APPENDIX G: DATA PRESENTATION**

This appendix is organized in the following way: in the first part, the participants' awareness, skills, and attitudes relating to their digital literacy practices will be presented. For each sub-theme, a short summary will be followed by the participants' multimodal compositions. Due to the abstractness of the concept of I-positions, most data illustrating the participants' I-positions were found in the individual interviews in the form of text and will be presented in the second half of this appendix.

### **The Participants' Awareness of Digital Literacy Practices**

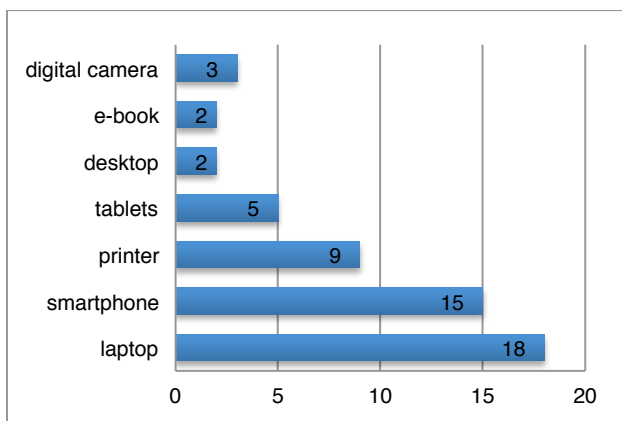
In this section, the data demonstrated the growth of the participants' awareness of their digital literacy practices when they were exposed to the technology-enhanced, multimodal, dialogical learning environment. From the data presented below, it was salient that the participants' awareness of the use of emerging technologies to represent their ideas shifted from concrete objects to abstract idea representations. At the same time, their awareness of the ideas and issues related to media literacy and information literacy broadened. For example, one sub-theme that emerged from the participants' data was the issue of copyright that is an important topic in media and information literacy education. Therefore, the data related to the participants' awareness is presented chronologically to show their growth and changes. The first sub-theme was the participants' perceptions of technology use in education.

#### **Technology Use in Education**

All 33 participants demonstrated awareness of the hardware they used in their current and previous learning experiences. They listed the tools that both their teachers and they themselves

used. The data showed that they were aware of their high reliance on the devices to do schoolwork. All 33 participants also described the software programs they used for schoolwork; these were mostly basic word-processing and presentation tools. Most of the participants were not aware of the great opportunities and potential of applications or other alternative software programs for educational purposes. In the very beginning of the study, the participants' reflections on technology use in education showed that their awareness of their digital literacy practices was quite limited to hardware and basic software programs.

**The ownership of technology devices.** When the participants talked about technology use in education, the most common description was the ownership of technology devices. The participants indicated that computers have already become an essential part of their lives. They could not stay in college without having a laptop. From the student information survey, it was obvious that all the 18 participants in my class had more than one device that they could use to search for information online, read or write documents, or take pictures. Figure 8 showed the 18 participants' ownership of technology devices. Even though owning multiple devices did not make these participants more digitally literate, the participants still perceived that the ownership of technology devices equaled to their ability of using emerging technologies to accomplish academic work.



**Figure 9** The 18 Participants' ownership of technology devices

In the class discussion, Lindsey indicated that technology meant all the hardware she had. From her perspective, learning with technology merely meant the use of a computer. Her artifact was a watch. She explained that a watch was technology when it was created. It gained more and more functions as the technology evolved. People in today's society could even benefit from a more advanced innovation, Apple Watch. Even though she said she was not sure how powerful Apple Watch would be, she believed that it could change people's lifestyles.

Another artifact was Google Glass made by Timothy. He said he did not have many fancy technology tools except for a MacBook, but he was willing to try more technology innovations and he believed that he would learn better with technology. Another two participants made similar artifacts such as iPads. Molly simply made the frame of the iPad and Shelby made a person holding an iPad. When Shelby was asked about the similar sizes of the person and the iPad, she laughed and said it might be because she relied on her iPad so much. She felt that the iPad was very powerful and could help her achieve many goals in her life, so she made it big.

The emphasis on the hardware of technology tools was a noticeable theme not only in the class discussion but also in the participants' reflections. In the first reflection on personal learning with the aid of technology, all the participants mentioned their personal devices and described what they did with the devices. A picture of a personal laptop or of all the devices the participants had was included in most of the participants' reflections. In class, Shelby made the artifact of herself holding an iPad, and in her reflection on technology use in education, she described herself feeling lost without her iPhone, iPad, or laptop, and she included a picture of all three devices.

A few participants gave examples of what their teachers in K-12 education had used to help them learn. For example, Keira made the artifact of a teacher and a student using a Smart Board to solve a math problem. In addition, it was common for her teachers and classmates to use tablets in class because they were in the Bring Your Own Technology (BYOT) program in high school. Keira noted that they did a lot of activities with the technology devices they had, but she was also aware of the distractions they provided when the activities were boring and repetitious.

**Table 16**

***Sub-Theme: “The Ownership of Technology Devices” in Different Modes***

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“Whenever I think of the word ‘technology’, I mostly think of the electronics we use, like computers, cell phones, tablets, etc.” (Ben)

---

“ While technology may play a great role in learning and the lives of students today, I only used my desktop to download music and play solitaire. Today, I feel lost without my iPhone, iPad or laptop especially when I need to check ELC before a class to ensure I haven’t missed an assignment that need to be completed.” (Shelby)

---

“Throughout my personal learning so far, I have discovered that the whole idea of school would be much more difficult without technology. Technology is what drives our learning processes. For example, my teachers use smartboard and we all have laptops.” (Keira)

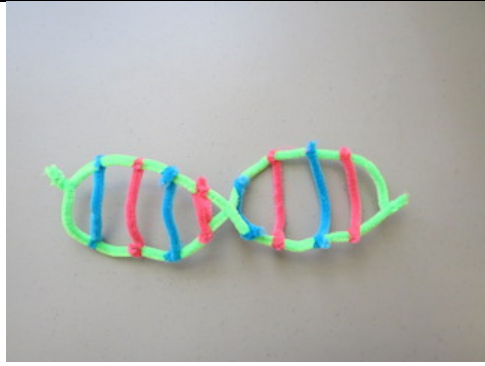
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Lindsey’s

Watch/ Apple Watch

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Timothy's Google Glass

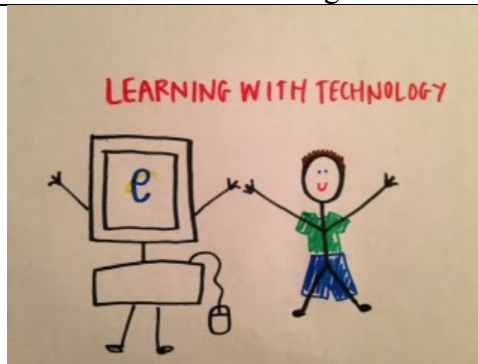


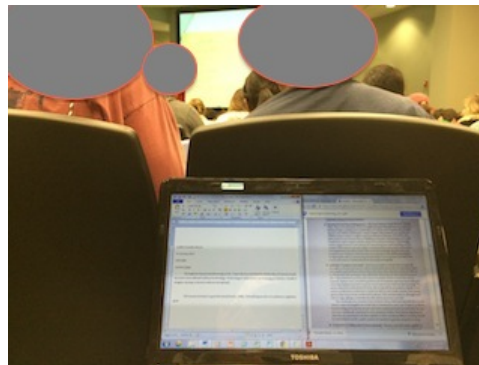
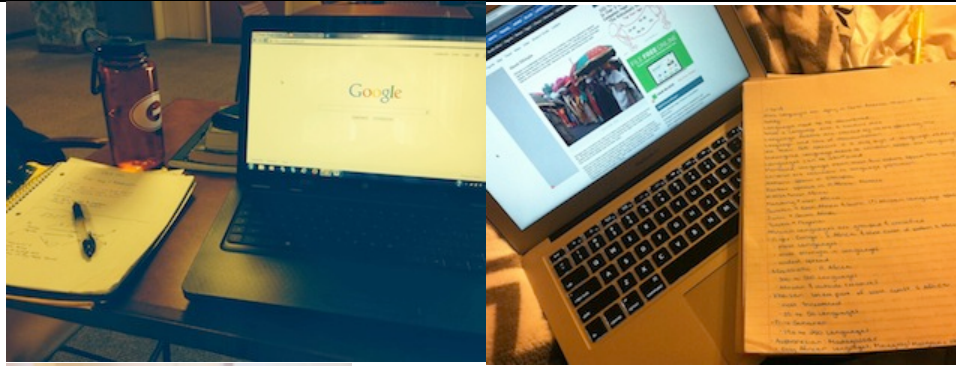
Molly's iPad/ Shelby

and her iPad



Marley's artifact showed the use of interactive whiteboard in high school





The most common image in the participants' reflection of technology use in education—a personal laptop for study.

---

**Software programs used in personal learning.** In addition to listing the devices they had, 21 participants described how they used software programs in their daily life and in personal learning. Several themes generated from the data showed the participants' awareness and perceptions of using software programs in their learning.

***Online searching: Evaluation or not?*** The most common use of educational technology was to search for information online. The participants heavily relied on the search engines to obtain information related to the courses they were taking or information they needed for daily life. In the personal reflection on technology use, a few participants indicated that Google was the first thing that came to their mind when they needed to find answers for problems in course assignments or in daily lives.

Patty made an artifact showing her dependence on her Apple products and Google. In her artifact, there was a small yellow ring in the lower right corner with a note “the Ring of Knowledge 21<sup>st</sup>.” She said that meant all the knowledge was on Google. She thought it was cool to get what she needed within seconds. Coco made the same claim that Google was the solution and firmly believed that most of modern society learned from Google. However, this kind of heavy reliance led me to inquire whether the participants were capable of making appropriate judgments when they searched for information online—that is, whether they developed information literacy.

Most of the participants’ reliance on Google did not decrease throughout the semester; nevertheless, they did show their increasing awareness of evaluating the information they found. For example, in her Learning Adventure Project reflection, Patty described how her partner and she used Google as the primary search engine to find the resources they needed. They evaluated the content of the information found on Google for the project. Instead of using the resources listed on the first page on Google as usual, Patty said she chose the resources and materials that would be appropriate and helpful for their elementary students in the project. In addition, they looked for other external resources as well. Patty’s awareness of information literacy increased by the end of the semester.

**Table 17**

***Sub-Theme: “Online Searching. Evaluation or not?” in Different Modes***

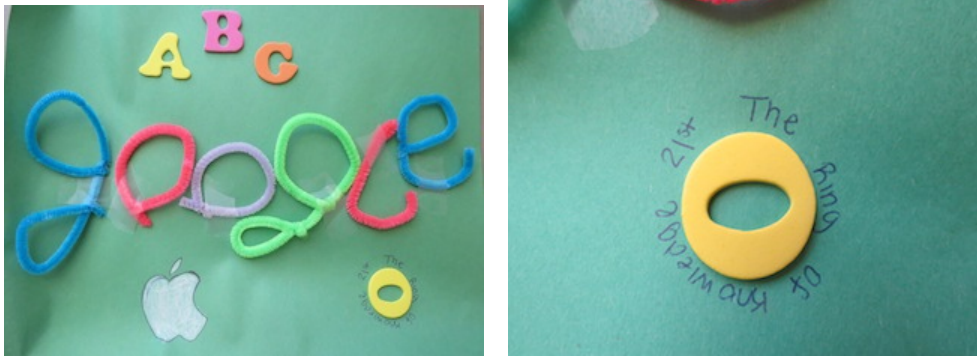
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“I believe ninety percent of what we actually learn comes from google. We google the answers to our homework questions, we google for any fact we want o know, we can even google google.” (Coco)

---

“Pulling out our smartphones and googling something we don’t know the answers to is something that our society has gotten very accustomed to.” (Ethan)

---



Patty's artifact showed her dependence on Google and Apple products.

---

***Social media. I am good at it, but professors are like dinosaurs.*** Unlike the low awareness of the potential of other software programs, the participants were highly aware of the potential of using various social media to help them learn even in the very beginning of the semester. They described the ways they used social media in group discussion and collaboration. Most of the 33 participants expressed that the use of social media in class was what they expected to see when it came to technology integration in education. They believed that social media would be very beneficial for educational use. Therefore, instead of thinking about how they used it, they questioned why there were not many educators using social media in their teaching, especially in higher education.

In the very beginning of the semester, most of the participants just expressed that they were not satisfied that professors either did not use social media or banned social media. They did not give any suggestions about how professors could use social media for their class. However, due to the familiarity they had with social media, the participants started to work on integrating social media into their projects. Two participants used the idea of social media for their Expand Your Learning Circle Project to redesign the projects in another two classes. Several other participants focused on using social media in education as the topics of the 20% Design Project. Some participants integrated the idea of using social media into their Learning

Adventure Project. This phenomenon showed that the participants were highly aware of their out-of-school digital literacy practices and managed to bring it into their formal learning.

On the other hand, some participants acknowledged that social media were like a double-edged sword. They helped people connect and communicate with each other, but at the same time, they could also be a huge distraction. Joanna made an artifact representing herself being connected to several major social media, but she also said she felt that she was being controlled by them. One participant, Jack, drew a picture to express his perception and doubt in the potential and problems related to the overuse of technology, particularly all kinds of social media.

### Table 18

#### ***Sub-Theme: “Social Media. I am Good at it, but Professors are Like Dinosaurs.” in Different Modes***

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“I guess I have never really thought about all that technology does, such as all the Microsoft documents we use—PowerPoint, Word, Excel—to help better learn and to help better organize our studies so we can be more successful.” (Amanda, beginning of the semester)

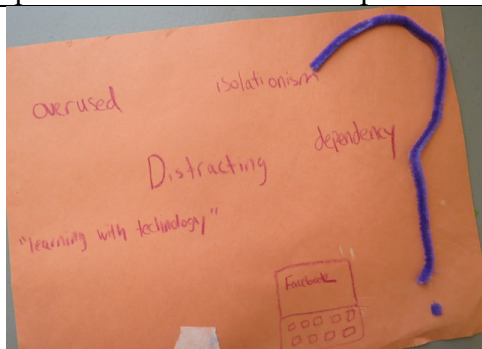
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“I am a current user of Facebook, and I know that it is very popular among our culture today. Facebook is a way for people to connect and share memories over the internet. I figured if we spent so much time devoted to this site for social and business-related reasons; why not use it to better our education system as well. The purpose of Facebook Classroom is to improve communication between the teacher and the student.” (Marley’s 20% Design Project)

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““Anything from a powerpoint and word document to a picture on social media or a tweetable quote are all outlets that help the learning process I enjoy now.” (Kate, the end of the semester)

---



Jack’s artifact showing his perception and doubt in the potential and problems resulted from the overuse of technology.

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Joanna's artifact showing her perception of social media use in everyday life.



Two participants, Amy and Lori, made artifacts about social media to show their expectations on professors to use more social media in class, but they did not give suggestions about how to integrate social media in class.



Roxanne was aware of the importance of visual literacy before coming to this class. She described herself a painter in her About Me page. Drawing had always been a way for her to express her feelings and thoughts. She noticed that visual artifacts were widely used in social media; therefore, she had a photo blog to help her post pictures about her ideas before she enrolled in this class. However, she admitted that she was not aware of the power of social network until she heard her peers talking about the need for professors to use social media. Therefore, she tried to combine these two things together for educational purposes. In Roxanne's redesign of course assignments, she advised that the instructor could use Tumblr, an interactive micro-blogging site, to ask students to represent their reflections on women's roles in America in the '50s. Instead of writing a paper, Roxanne believed that this would be more meaningful for students to deeply think about what they learned about life in the '50s.

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## How can Parents and Teacher use these Social Media sites to their advantage?



Marley's idea of using social media to improve communication between parents and teachers presented in her 20% Design project.

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*Available programs on my laptop: Do I really know how to use them?* Another theme showed the participants' use of Microsoft Office® programs to write papers and do class presentations. However, most of the participants expressed that they never really knew they could use the basic tools to make their learning more effective and meaningful. For example, when we talked about possibilities of using Word® to create tri-fold brochures or posters, interactive PowerPoint® presentations or PowerPoint® games in class, the participants demonstrated a lack of knowledge in these features in Microsoft Office. Joanna said that she had seen interactive PowerPoint® presentations before, but she did not know how to make them.

Beyond the Microsoft Office® programs, some participants were not aware of the available programs installed on their laptops. Sonia described her surprise when she found iMovie in the application folder on her MacBook in her reflection on the Commercial Project. Even though some participants knew those programs were available, they had never tried to use them. This phenomenon showed that the participants were not aware of the potential of using available software programs for educational purposes.

### Table 19

#### *Sub-Theme: "Available Programs on my Laptop: Do I Really Know How to Use Them?" in Text Mode*

---

"I had never used iMovie up until this point. I didn't even know it was installed on my laptop already, to be honest! I did not know how to work this program at all, so this presented a challenge for me while creating this project. I was initially having trouble adding title screens

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and adding the voiceovers. Once I figured it out, I finally created my Web 2.0 project.” Sonia’s description showed that she was not aware of the availability of iMovie on her laptop but that the project was a pleasant learning experience.

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**Online learning management system: Lifesaver?** Another sub-theme was the increasing use of online textbooks and the web-based learning management system. When the participants used the system, they took online quizzes, joined online discussion, downloaded course materials, and checked course requirements and grades. Sonia said that it was a lifesaver for her, because everything related to school was on the same site. Janet and Shelby said it was helpful that they could check everything related to the courses via one site on any device and did not need to bring a lot of papers and binders. This theme implied that the delivery of course materials transferred from traditional paper-based format to web-based format was common in 21<sup>st</sup>-century learning and teaching. Apparently, the participants embraced this change.

**Table 20**

***Sub-Theme: “Online Learning Management System: Lifesaver?” in Pictorial Mode***



Sonia’s image showing her reliance on the course management system.

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**The Participants’ Awareness of Visual Literacy.**

Visual literacy was a major digital practice that the participants were aware of due to the focus on multimodality in this learning environment. Many participants described themselves as visual learners when they reflected on their previous learning experiences. Coco thought that she would remember the information more easily if she could recall the image associated with the topic. Janet also made a strong statement about herself being a visual and kinesthetic learner.

She acknowledged the importance of listening to the content; however, she could have only said that she truly learned the new material when she was able to see or do something related to the concept. Janet also claimed her strong belief in using technology as a great visual aid in the learning process.

From my observation at the beginning of the semester, I noticed that most of the participants in my class were confused or bored with the activities of making artifacts or posters to represent what they were thinking. Only a few participants could make complicated artifacts to express the abstract. I even heard them talking about how the idea of using pipe cleaners, pompoms, or play dough was childish and they wondered whether they were still in K-12 classrooms. However, after the 18 participants in my class shared their first artifact about technology use in education, some participants started to show changes in their attitudes toward different kinds of craftworks. They were aware of the effect of a simple visual aid like a craftwork.

Several participants said it really encouraged them to be more creative. In their first project of creating a commercial for a technology software program or an application, a group of three female participants chose to make a commercial for Prezi. They wanted to promote the visually appealing feature of Prezi to their classmates, so they needed to “tap into their creative side” (quoted from Janet’s reflection on commercial). Their final product was a movie trailer for Prezi. To complete this project, the three participants worked on the storyboard first and then recorded the scenarios. They even asked a male classmate to do the voiceover for them. Their final product was very successful and drew their classmates’ attention. The comments they received from their peers were mostly about their creativity in creating a story of how the

visually appealing feature of Prezi could change a college student's boring life to an exciting one.

One of the three female participants, Janet, said that she never thought about creating a commercial to introduce products to others. She said the experience of making a commercial like this obviously helped her a lot. As a management and information systems major, she would love to use this approach to make meaningful presentations in other classes. She was aware of the importance in using emerging technologies to create or make products that could present information to others.

Many of the participants' Expand Your Learning Circle Project final products demonstrated their increasing awareness of visual literacy when they added visual aids in the class presentations or redesigned the assignments from papers to posters and videos. Several participants described their dissatisfaction about the dullness of their instructors' PowerPoint® slides. In one of Coco's classes on campus, the instructor used "standard white page with grey accent pages" (quoted from Coco's reflection on Expand Your Learning Circle Project) in the PowerPoint® presentation throughout the semester. In addition, Coco felt confused and demotivated in class when the instructor essentially recited the slides in which the content was directly copied from the open educational resource the instructor found. Coco appreciated that she did not need to buy an expensive statistic textbook like her peers, but she could not understand the differences between learning from a free online textbook or having a professor simply recite the same content in PowerPoint® presentations.

Coco was not the only one giving examples of instructors' poorly designed PowerPoint® presentations. Several participants chose to redesign the PowerPoint® slides from their instructors to help themselves learn better and remember the content. Their new designs were

truly more visually appealing and demonstrated some effective design techniques. Most importantly, the participants realized that when they tried to redesign the presentation from descriptive texts to a multimodal composition, they actually learned the content and could introduce the concept to others without reading the texts.

The participants said that they realized that creating visual aids also allowed for more communication and discussion about the topics. The 18 participants in my class played an augmented reality (AR) game to learn the basic concepts of critical thinking. The videos embedded in the game helped them think more about what kind of critical thinking they actually were doing every day. In addition, the AR game combined reality and the virtual world. The participants needed to observe the environment and solve the puzzles in order to get to the next location for new information. When they got back to the classroom, we had a great discussion about critical thinking based on a word cloud composed by the standards and definition of critical thinking as provided by the International Society for Technology in Education and we also talked about what they learned in the game.

Posting images in personal blogs to support their argument was challenging to the participants, especially when they tried to fulfill the requirement of using at least two different modes. Timothy said it felt like a waste of time in the beginning, but then he became aware of the importance of using images as illustrations or extensions of ideas by reading his partner's reflections. However, certain image choices could cause confusion. For example, one of Keira's images left her partner confused about its relationship to her perception of visual literacy.

Due to the continuous exposure in the multimodal learning environment created by both instructors and their classmates, most participants were aware of the importance to visualize their ideas. The 13 participants in the interviews expressed that it helped them realize how powerful

visual aids could be just by seeing Maggie and me use different kinds of visual aids to talk about the foundations in education. It made the learning theories or concepts easy to remember, especially for those who were not education majors. Furthermore, six participants said that the way Maggie and I used multiple visual aids and activities made them feel more engaged. Now that they had an increased awareness of visual aids, they felt that it was really bad that many educators were not aware of the potential that visual aids could bring to the classroom.

**Table 21**

***Sub-Theme: “The Participants’ Awareness of Visual Literacy” in Different Modes***

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“In a world full of endless imaginations and daydreamers, visual literacy has become so important and the norm. Our learning is continually evolving into a ‘new language’. I definitely think keeping this blog up with visual presentations is challenging. It’s a lot of work and extra time spent. At times, I think it is unnecessary, but then when I go to someone else’s blog and I see how great it looks how quickly I focus and retain the information just by the sheer look of it, I know it is beneficial.” Coco’s reflection showed her understanding of the significance of visual literacy in today’s world, but then she denied it in doing visual presentation for her blog reflections. It was the experience of reading others’ blogs strengthened her belief again.

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Keira used these two images to present her perception of visual literacy and her experience in creating visual presentations for her blog posts. She typed all the important words related to visual literacy in her mind and the sentences she marked in the reading to make the word cloud. That word cloud demonstrated her belief in encouraging students to develop visual literacy. In her reflection, she wrote the following words to go along with her second image, but since her words did not tightly connect with the image of a ram, her partner became confused. “In keeping with this blog, I have found it challenging to incorporate a visual image. However, I enjoy this challenge. It has definitely force me to change the way I ‘see’ words and concepts and has required me to look at information in a new way.”

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“As I sit here and think about my past learning experiences, I realize that visual literacy is a major part of my educational experiences. It is kind of sad that I never thought about it before... This experience (creating visual representations for the blog) influenced my visual

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thinking and writing and because it taught me many things. I learned that communication is key, and there is no right or wrong answer when it comes to learning creatively.” Molly described her lack of awareness of visual literacy before and examined how the experience of keeping a multimodal blog helped her change her perspective in her reflection on visual literacy.

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Amanda said that this was not the first time she was challenged to create visual representations. In another class, she needed to “create a comic strip after understanding and researching a topic on a criticism of education” (quoted from Amanda’s reflection on visual literacy). However, she still felt that keeping the blog with visual representation was very challenging for her. This was because they were not allowed to find images online; instead, they needed to create the images on their own. Still, Amanda described it as a good challenge, because that restriction pushed her to “be creative or to think about it over and over when thinking of pictures to take or videos to make relating to the subjects we are reflecting on” (quoted from Amanda’s reflection on visual literacy).

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“Reading these articles about visual literacy and keeping this blog (which is a hassle) help me realize that visual literacy is everywhere. As a 21<sup>st</sup> century learner, I could help myself develop visual literacy by taking more time to think through an image, before just ‘Googling’ an answer. By doing so I can challenge my brain and myself to reach conclusion on my own, without the hindrance which are Google and the Internet. By processing a conclusion on my own, I can further develop my visual literacy, instead of crippling my ability to form an opinion.” Cameo wrote the statement above in her reflection on visual literacy. She definitely did not enjoy keeping the blog. However, she was being aware of how visual literacy practices could help her in the long run rather than turning to Google without even thinking about the content on her own. Even though she said she was not good at creating visual presentations, she actually was one of the very few who kept drawing the images. Her images were simple but conveyed the main messages in her posts.

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## Copyright? © or ©.

When we talked about copyright issues in class, the participants were all aware of its importance. However, their behavior in searching for information online showed evidence of their complete ignorance of copyright issues, especially when searching for images online. All 33 participants did not know that they needed to put references in their blog to give the photographers credit. One participant said that she has been copying and pasting images from Google for years without citing them. Before the class discussion, none of the participants knew the purpose of Creative Commons; basically, only one participant out of 33 had heard about it. In a society where images and videos can be so easily created and shared, the participants apparently had no idea how to protect themselves for their own copyright and how to protect themselves from not violating the copyright law.

### Table 22

#### *Sub-Theme: “Copyright? © or ©” in Different Modes*

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“You showed us how to search images that was free and legal to use. I never knew about the search tool in Google. Oh, and also you asked us to create images for our blogs...that was challenging in the very beginning. But later on, I actually found it was easier and safer than copy and paste the images from the Internet, because it won’t be against the copyright law...so I do feel that I am better at searching for information online...or I should say at least I can protect myself more. And that is why I designed the photo literacy project for the 20% Design Project.” Julianne’s statement showed that she felt more comfortable in using images found online and showed that her information literacy developed during the class.

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“You always talk about copyright issues, since the first class. I thought you were mean and crazy though [laugh]...I have copied and pasted the images I found online in my assignments a thousand times and nothing happened. But then you made us make the slow animation video and you are exactly right! A good video deserved to be protected! I don’t want someone to just use my slowmotion to teach others without getting my permission! I spent so much time and energy on it, if someone just took it, I would definitely sue her! [laugh]. After making my slow animation, I really become very careful when I try to use images I found online...I don’t want anyone to sue me.” Amy talked about copyright issues in the interview. She either was not aware of them or did not take a serious attitude toward them before the stop animation project. After that, she was highly aware of copyright issues and totally changed her attitude.

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In short, the participants were not strongly aware of their digital literacy practices for educational purposes. Instead, their overemphasis on the hardware and basic features of some popular software programs limited the potential of using emerging technologies to help them create significant learning experiences. The technology-enhanced, multimodal, dialogical learning environment helped them see more possibilities and the critical issues of using technologies in education and thus, they gained more awareness. With the increasing awareness of the significance of their digital literacy practices, the participants also needed to examine and strengthen their skills. The next section will talk about the participants' skills in digital literacy practice.

### **The Participants' Skills in Digital Literacy Practices**

From the participants' descriptions of their use of technology in their previous learning experiences, it could be inferred that the participants were capable of understanding texts presented in different modes when searching for information online. It was difficult to know whether the participants could evaluate and judge the information from their personal descriptions, but their writing suggested that the participants had limited ways to express their ideas and thoughts with the aid of emerging technologies in their learning. Word-processing software, including Microsoft Word®, Microsoft PowerPoint®, and Pages in the Macintosh system were the most popular tools among the participants when being asked to write papers and do presentations.

To further understand the participants' skills in using technology tools to create texts in different modes, the 18 participants in my class were asked to evaluate themselves. The following charts demonstrated the self-evaluation of their skills in various technology tools from the 18 participants in my class, and I categorized the result into three major sub-themes:

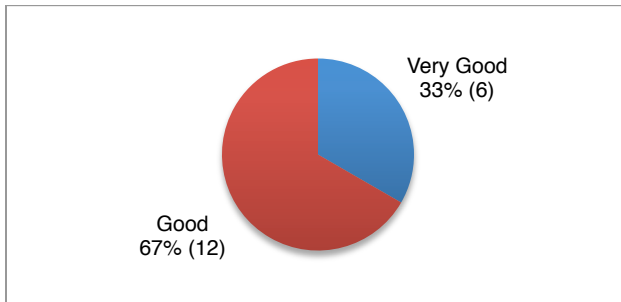
familiarity with Microsoft Office® programs, familiarity with visual aid creation and editing, and familiarity with Internet use. I did not have the 15 participants in Maggie's class complete data regarding how their skills in digital literacy practices had changed, but several of them described their own growth in the reflections, and two of them participated in the interviews and engaged in self-evaluation then.

The last sub-theme in this category emerged from the interview. The participants addressed how their skills in organizing and presenting their ideas to others were greatly improved in the multimodal, dialogical learning environment. They learned to utilize different modes to make meanings for different audiences. When they were organizing their ideas, they would think more critically and deeply, because they knew there would be an audience in addition to their instructors and partners. This sub-theme implies the participants' various I-positions in the digital literacy practices that will be discussed in the second half of this chapter.

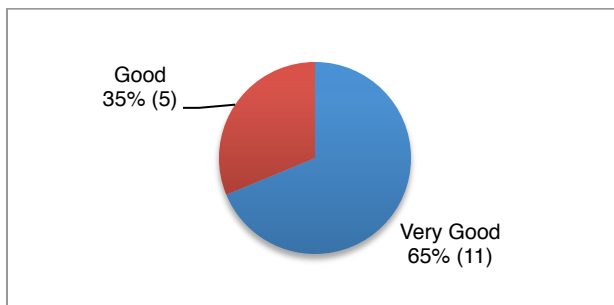
### **Microsoft Office® Programs: A Piece of Cake?**

The first sub-theme was about their skills in Microsoft Office® programs. If the participants used a Macintosh system, the programs could refer to Pages, Numbers, and Keynote. Most participants were very confident and comfortable with using word-processing tools because they had used the software since childhood. Most participants said that a word-processing program was the first software program they had learned to use to do their homework. However, as described in the previous section, the participants realized that they did not use these software programs to their full potential. Even though Maggie and I did not teach them how to use these programs in class, the participants still used the tools to create their worksheets for the Learning Adventure Project. I noticed that a few participants stepped out of their comfort zone in trying different functions in Word®. They collaboratively learned more features in Word®. Therefore,

there was a slight difference in their confidence in their capability of using word processing tools before and after being exposed to this learning environment.

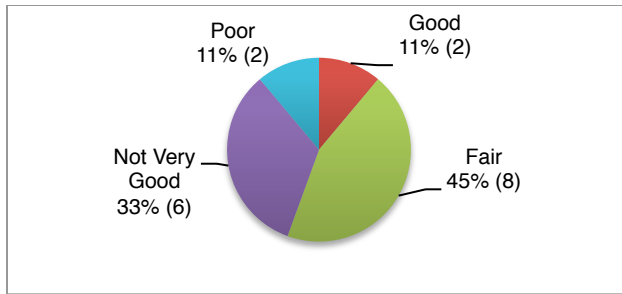


**Figure 10** The 18 participants’ pre-evaluation of proficiency in Word®

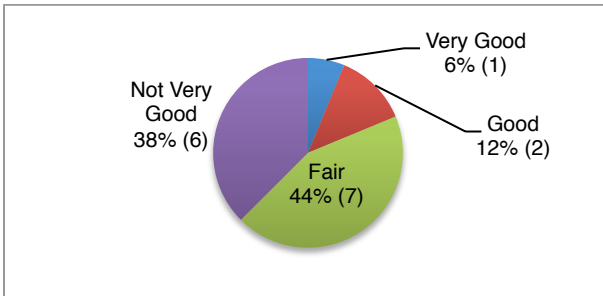


**Figure 11** The 18 participants’ post-evaluation of proficiency in Word®

Most participants evaluated their skill in using Excel® as fair or not very good. This was a common phenomenon in almost every class that I have taught in this university. In the student information sheet, there was one statement that the participants needed to complete: that is “this class will be great if we...” One of the participants completed with “learn how to navigate through different programs such as Microsoft word and excel, etc.” College students felt the need to be proficient in Excel®. Nevertheless, the proficiency in Excel® was not a major focus in this study. There were no projects requiring the participants to create spreadsheets. Therefore, the participants’ self-evaluations before and after this class were similar.



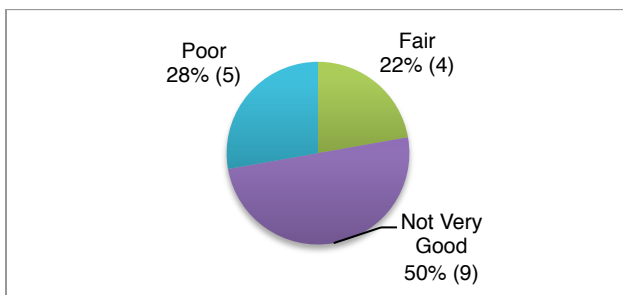
**Figure 12** The 18 participants' pre-evaluation of proficiency in Excel®



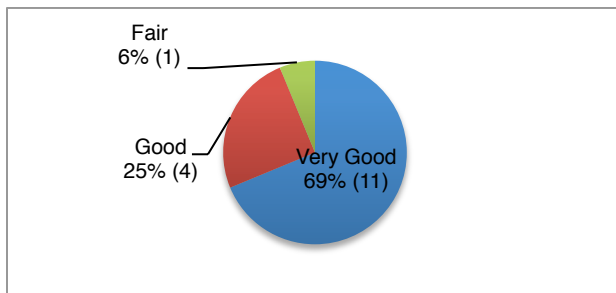
**Figure 13** The 18 participants' post-evaluation of proficiency in Excel®

When it came to the self-evaluation of proficiency in PowerPoint®, I was expecting to see higher levels of perceived proficiency. However, the participants surprisingly evaluated themselves as not very proficient in using PowerPoint®. None of the participants thought they were good or very good at the most common presentation tool. When they were asked about the reason, some participants said that they were not confident about making a good presentation that could draw audiences' attention. For example, Joanna described a PowerPoint® presentation she has seen as very interactive that had several embedded video clips and audio files. The presenter even made the PowerPoint® presentation appear to be like an animation, but she did not know the strategies to do it. Therefore, she rated herself being poor at using PowerPoint®. Her explanation showed that the participants were aware of the possibility of creating good PowerPoint® presentations; hence, they were not satisfied by merely being good at using the basic features in PowerPoint®. In addition, they had seen many PowerPoint® presentations; their standards of good presentations might be higher.

Even though PowerPoint® was not a tool introduced and taught in this class, the participants still frequently used it in a few projects. In the Expand Your Learning Circle Project, several participants chose to redesign the poorly designed PowerPoint® slides made by their instructors. With their increasing awareness of the potential of visual aids, the participants were willing to try different features in PowerPoint®. One participant even asked me to teach her how to make an interactive PowerPoint® presentation. The participants' awareness was the best motive for them to improve their technological skills.



**Figure 14** The 18 participants' pre-evaluation of proficiency in PowerPoint®



**Figure 15** The 18 participants' post-evaluation of proficiency in PowerPoint®

**Table 23**

***One Participants' Example of the PowerPoint® Presentation Redesign for the Expand Your Learning Circle Project***

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Julianne's redesign of the instructor's PowerPoint® presentation in her communication class.  
Original slides:

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## Other goals of a job interview

- Employer evaluates candidate
  - skills applicable to the job
  - competence to do the job
  - potential to contribute to the team/organization
  - ability to mesh with team's/organization's mission, philosophy, and environment
- Candidate evaluates employer
  - match between interests and job tasks/work
  - degree of responsibility and challenge
  - potential for growth and further education
  - ability to mesh with team's/organization's mission, philosophy, and environment

## making a good impression

- show up on time
- check your appearance
  - dress appropriately "dress for the job you want," better to overdress
  - use appropriate waiting room behavior
  - be conscious of your dress and appearance
  - act alert and interested
  - pay attention to your voice and your habits
  - give a firm handshake
  - use the interviewer's name
  - make small talk
  - ask opening questions

## 10 interview bloopers

- poor handshake (limp hand, tips of fingers, arm pump)
- talking too much (talking too long, but not answering direct questions; nervous talking)
- Talking negatively about current or past teams, coworkers, employers/managers
- showing up late or way too early
- treating the receptionist rudely
- asking about benefits, vacation time, or salary in an initial interview
- not preparing for the interview
- verbal tics (um, like, you know)
- not enough/too much eye contact
- failure to match communication styles (e.g: too informal, too businesslike)

## 8 keys to interview success

1. Make a positive impression
2. Communicate your skills
3. Use control statements to your advantage
4. Answer problem questions well
5. Ask the interviewer appropriate questions
6. Help employers know why they should hire you
7. Close the interview properly
8. Follow up after the interview\*

Julianne's critique:

"These slides had fantastic information, but the format made it difficult to really get a grasp on it. There were no graphics, making it difficult to get a thorough understanding of the material. It was also not visually appealing; the presentation was in black and white. Finally, there were no other resources or methods of absorbing the same information. I would have liked to see more graphics as well as videos and other resources to use for the job search."

Julianne's redesign:

The redesigned slide features a blue header with the text '+ What are the goals?'. Below this, a blue box contains the text '■ Employer evaluates candidate'. To the right, a blue thought bubble contains four questions: 'Does he/she have the skills needed for the job?', 'Is he/she competent?', 'Will he/she contribute to a team?', and 'Do his/her values and vision align with ours?'. Below the thought bubble is a small image of a person in a suit with a 'CEO' label. To the right of the slide, a blue header reads '+ Pop Quiz (Answers)'. Below this is a list of eight items, each with a blue square bullet and a green checkmark or red X: 'Communicate your skills? ✓', 'Use control statements to your advantage? ✓', 'Show up more than 20 minutes early? ✗', 'Help employers know why they should hire you? ✓', 'Talk negatively about previous employers/teams? ✗', 'Ask about benefits or salary during the interview? ✗', 'Follow up after the interview? ✓', and 'Give a limp handshake? ✗'.

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+ How can I make a good first impression?



Here rationale for saying her redesign was better:

“I changed this presentation to include: more graphics on each slide, to make the presentation more engaging. It also includes more interactive content. I added a pop quiz to cover material, so that the class can guess and answer questions before they are told the right answer. There is now a video in slide 3 so that there are different mediums of learning incorporated in the presentation. Finally, it now has greater visual appeal; the presentation has more color, images, and much less text than before.”

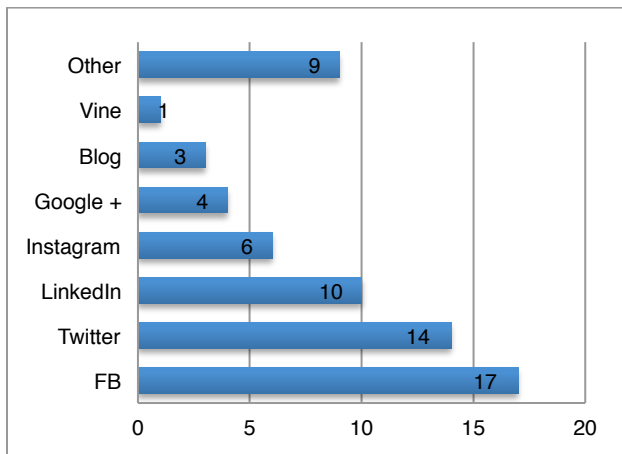
Her example shows that she embedded the idea of multimodality into her redesign. During the interview, she indicated that was what she learned the most in this multimodal learning environment and it actually helped her learn the content better.

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### **After Saying “Cheese”, What Should I Do?**

The second sub-theme in the participants’ skills was about creating and editing digital visual artifacts. Sharing images with others was a main feature in some popular social media sites. Many emerging technologies allow individuals to edit images and create short video clips. Digital editing and sharing of images and videos were common for personal use; however, most of the participants said these were not yet employed as common strategies in their learning. Some participants in this study did use social media for their learning before taking this course. For example, Keira had a board on Pinterest to collect the images related to her major, speech pathology. Jack tried BuzzFeed once and wrote a humorous reflection on one of the articles he read for a class. Figure 15 demonstrates the participants’ engagement in some major social media sites or tools, but most participants did not use these social media related to their learning. All the social media sites in this figure offered opportunities for their users to upload images or videos. Although being engaged in these social media sites did not mean that users needed to be

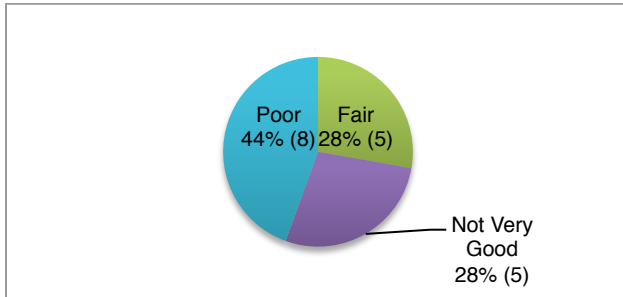
able to edit still images or videos, such engagement showed that visual works played an important role in expressing personal thoughts, showing personal interests, and communicating with others. As discussed in the previous section, the participants were more aware of visual literacy practices, but they needed to sharpen their skills in editing visual aids for educational purposes.



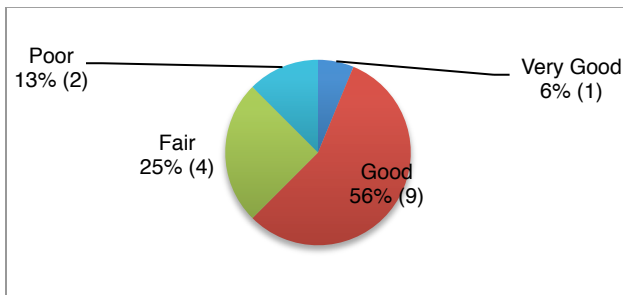
**Figure 16** The 18 participants' social media engagement in their daily life

It was interesting to see that most of the 18 participants evaluated themselves as poor or not very good at editing still images and videos. They knew of some of the famous software programs to edit images or videos. For example, most of them heard about Photoshop®, iMovie, Lightroom® or the application Vine, but only two of the participants learned how to use Photoshop® and had opportunities to practice it in high school. Most of the participants did not have any experience in using image or video editing tools. Kate played with Vine a few times, but she said she was not good at it. Timothy was very interested in photography, but he also expressed that he never took any courses or workshops to learn advanced image editing skills. He felt that he still had a lot to learn about editing still images. Learning more about the techniques of image and video editing was one of the goals that most participants had for this

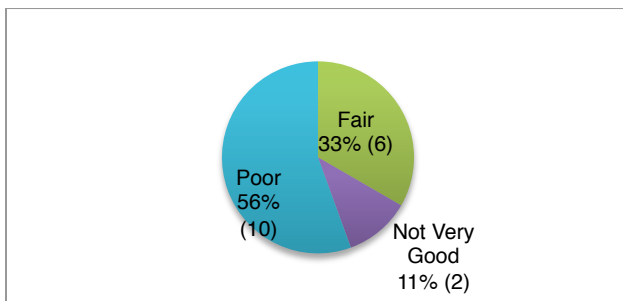
class. From this self-evaluation result, it can be said that the participants were not confident in editing images and videos before the class. It implied that the participants played mostly the role of consumers but not producers in their digital practices of image and video editing.



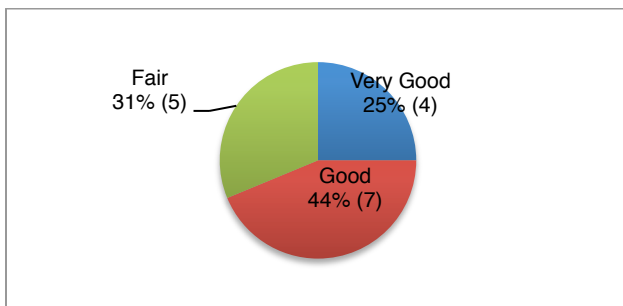
**Figure 17** The 18 participants' pre-evaluation of proficiency in digital still image editing



**Figure 18** The 18 participants' post-evaluation of proficiency in digital still image editing



**Figure 19** The 18 participants' pre-evaluation of proficiency in digital video editing



**Figure 20** The 18 participants' post-evaluation of proficiency in digital video editing

Maggie and I introduced several movie-making software programs and applications for the participants to use to accomplish the tasks for their projects. Jing, iMovie (both the laptop version and the application for iPad), Windows MovieMaker®, YouTube, Preview in Macintosh system, Vine, and Cameo were introduced to the participants. Several participants described their experiences in learning these tools and their growth in editing images and videos in their reflections and the interviews. Most participants realized that creating a video was not as difficult as they thought, even though a few of them described their frustration with the tools they chose. After they learned the basic functions of editing images or videos, the participants realized that what challenged them the most was actually the content of the video, especially when they wanted to be creative in making a video that was informative and eye-catching at the same time. For group projects, some participants also described how collaboration helped them learn to use the tools or to be more creative.

#### **Table 24**

##### ***The Participants' Reflections on Editing or Creating Images and Videos"***

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"This project was not my first experience with making a commercial. However, it was my first time using Jing and editing videos. I was not familiar with Jing before starting this project, but it was really simple to learn how to use. There really wasn't any frustration in making this video once I figured out what I wanted to say and how I wanted to shoot the video." Marley's reflection on her experience in making the commercial by using Jing.

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"I thoroughly enjoyed making the commercial. Deciding on a tool to use [here she meant the tool to introduce in the commercial] was easy because we all agreed on Prezi immediately. Coming up with the storyboard for the commercial was slightly more challenging because we wanted to make it creative. We discussed a few different ideas, but eventually decided on making it like a movie trailer. I have very little experience with video editing so it was definitely a learning experience. It was great that Shelby experiences with iMovie to make the process less frustrating. Once we began shooting the mini scenes for the commercial it just came together easily. iMovie made it simple to add the music and voice-overs. I would actually be interested in doing video editing as a hobby once I gain more experience." Janet reflected on her experience creating the commercial by using iMovie. Working with a partner who had video editing experiences before was a big help to her, even though it took a while for them to come up with the content. During the interview, she told me that it was hard for them to think about the content in part because of the different opinions among all three of them. Another reason was actually because of my advice to them; Janet said that they were kind of forced to be creative

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because I told them Prezi was a popular tool chosen by previous students, and they really wanted to impress the class and me. They achieved their goal and won the Best Commercial Award in class with the movie trailer for Prezi. Janet said the experiences in creating different kinds of videos in this class really made her become more proficient in editing videos and she said that she would love to make more videos in her personal life and for the student athletes she tutored.

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“I really enjoyed doing this commercial and I am pleased with how it turned out. I have used iMovie in previous classes but this is the first time I used any sort of video screenshot like Jing. I was excited when researching and playing with my tool. However, the frustration started when making the PowerPoint. I had to create over 100 slides to create the effect that I had. It was definitely a very tedious process. Jing was also frustrating because it took many times to film and get the timing correct. It was also frustrating that you can’t edit the Jing video after you record.” Keira had previous experiences with video editing in the BYOT program in high school. Even though she had experiences with iMovie, she came out of her comfort zone to try a different tool to make her commercial. During the interview, she said she felt that she learned a lot even though it was a very frustrating experience. Making the commercial about a GIF creator tool greatly aided her in making the slow animation project later that semester and it helped her understand more about animation. She believed that all the skills in creating and editing videos with different tools would help her a lot in her future career as a speech pathologist, because she said she needed to design and create different videos for her students or patients due to their different needs.

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“I did not know I could record a video on YouTube. Seriously, who will think of YouTube as a recording tool? We all use it every day to watch tons of videos, but I guess we just never explore what we have...It makes it so easy to make a video, but it is really hard to think of what you want to talk about, especially when you think of people who might watch this video on YouTube.” Coco described her surprise at YouTube as a video editor and her concern of possible audiences in the process of creating videos during the interview.

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“I like the videos I created in this class. I did not know I could make an animation, or a commercial! It was a lot of fun to make those videos...um, and it’s not difficult at all, especially the animation. I thought making animation would be very difficult...oh and it is really cool to see everyone’s animation too! I like the boys’ animation of football a lot. It helps me know more about the different positions and the way they made it is so cute! I think making these videos really helps me to be more creative, because you just don’t want to show a video and then everyone is like...oh, that cliché again. So I think that is one big takeaway for me.” Amy described why the usefulness of video creation was a takeaway message of this class for her in the interview. It was obvious that she felt she learned a lot not only in terms of the skills required for making videos but also in being creative.

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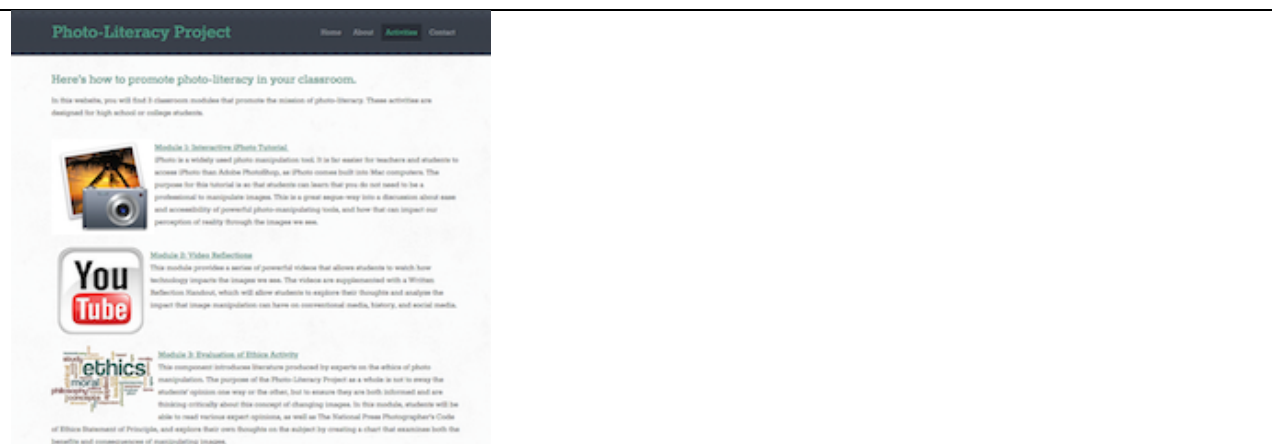
The participants mostly shared positive feedback regarding their experiences in learning to create videos with different tools. Even though some of them did have some frustration, they were still content with not merely the skills they gained in creating videos but also in their capability to think creatively. From their post-semester self-evaluation, it was obvious that they

were a lot more confident and comfortable about creating and editing images and videos in the future.

Once they gained the skills to use technology tools and became aware of the importance of using technology to represent what they have learned, they started to apply the skills as much as possible. After doing the YouTube reflection, several participants used the strategy of recording their author introduction video in their 20% Design Project. After editing images for their About Me page, several participants edited images for their Expanding Your Learning Circle Project or designed an image-editing assignment for the learners in their 20% Design Project. Table 13 showed several examples of the participants' application of their use of image and video after they learned the skills.

**Table 25**

***The Participants' Examples of Video and Image Creation***



Julianne designed a website about photo literacy for her 20% Design Project. She said the idea was developed after she read the articles about visual literacy. She realized the importance of helping others cultivate their visual literacy since we were in a society where signs were almost as important as words. She was sad that visual literacy was a missing piece in K-12 education. Therefore, she wanted to create a site to teach high school students develop visual literacy. On that website, she focused on her learners' skills in image manipulation as well as skills in critically evaluating and interpreting information carried by images.

Janet used her new skills in editing images to redesign her assignment for her Business Intelligence class. The original assignment was designed to have students answer 5 short answer questions about how mobile technology could be used as a business promotion strategy for one famous clothing company. They have talked about one company as an example in class;

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therefore, this was like a practice or repetition of what they had done already. She was disappointed that they needed to write their answers in words and would only present their answers to the professor. Therefore, she redesigned the assignment from turning in a paper to creating an e-poster. The following were the original assignment and her redesign.

The original assignment:

Fast Fashion Class Assignment

1. Zara uses vertical integration for their supply chain. They create scarcity value by only making a few sizes of each garment on an "on-demand" schedule. On the contrary, Guess uses the same designs in all of their stores. They have slower production cycles than Zara. Guess has stores in shopping malls and they advertise heavily in fashion magazines and on billboards. Zara does little to no marketing of their brand and they have strict modesty rules. Zara uses the location and design of their shops as their marketing tool. The audience of the MicroStrategy Mobile BI implementation at Guess are the store merchants, designers, and executives.
2. The target audience for BI software at Zara would be the designers, their shop managers, and the regional sales managers.
3. The audience for the BI software needs to know of current fashion trends including: sizes, colors, styles most commonly bought. Seeing the stores' best sellers will help them better manage inventory and predict sales.
4. I think that a mobile solution is necessary, so I would implement a BYOD policy. Zara executives and designers are always traveling so they need this pertinent information at their fingertips. Going mobile will help them have this information readily available whenever they need it. ]
5. If I developed a dashboard for Zara I would put inventory levels from each shop, the top sellers, and performance trends over time. These metrics will allow executives to know what items to send to each store. The audience for this dashboard screen would be regional sales execs. They tell them the design trends and current sales. The execs can tell the designers of this information so they know clothes to make more/less of.

Janet's redesign of the assignment example:



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Kate was the one who used Vine before, so she was already interested in creating visual artifacts in her personal life. In her commercial project, she chose to make a commercial of Vine. After doing the research, she was surprised that many educators were actually using Vine to create instructional videos. She emphasized that fact in her commercial. Later on, she redesigned an assignment in her diversity class from a two-page summary to a video composition. She used iMovie to combine several short clips recorded in Vine and some videos and talks about diversity that were free to reuse in order to present her ideas that originally were assigned to be written as the two-page summary. She said, "I feel like the video is better than the summary because most students summaries will be similar but each student's video would be different. If we had presented each video at the end of class, everyone would be able to visually see what the messages their classmates were able to get out of the class. It would enhance everyone's learning!"



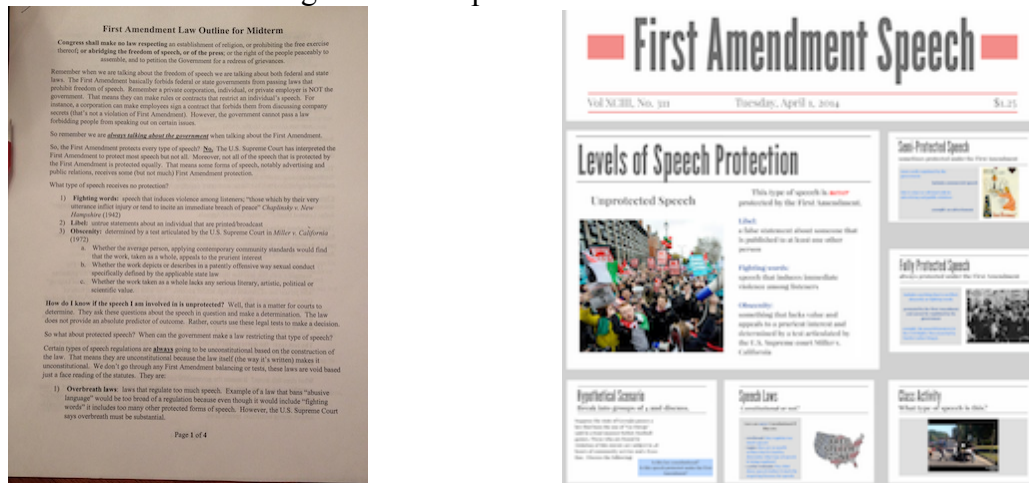
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Sonia redesigned the course handout in her Advertising and Public Relations Law class. "[in the class], basically our professor stands in front of the class and talks while we take notes. He

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doesn't use any visual aids, but does give us a handout of important information at the end of class. I think my classmates' and my learning experiences would be enhanced by adding visual aids and applicable examples to help us to understand concepts completely... The handout has a lot of information crammed into the page. It's simply black and white and has lots of words and paragraphs to read, rather than really breaking the information into bullet points or highlighting the important facts. A presentation with bullet point, interactive components and visual elements would help to improve the learning process. Shelby's group's commercial about Prezi is really cool and I learned that visual literacy is very important in learning, so I decided to create a Prezi to present the same information. I loved this one in particular looked like a newspaper; perfect for talking about First Amendment speech in the media! I added a video component and a class discussion component to give the lesson depth and to make it interesting and interactive just like what I experience in this class! By using a web2.0 tool like Prezi, I was able to create a presentation that was both informative, interesting and interactive. I think that integrating technology in the classroom really engages students and brings the seemingly boring black and white text on a page to life."

Original handout and her redesign as a Prezi presentation:



Many participants indicated that they learned a lot by presenting their ideas with the aid of visual aids in this multimodal learning environment, especially in the Expand Your Learning Circle Project. From my observation, in addition to learning through this redesign project, some participants definitely showed improvement in their choices of images presented in their blogs. Some participants still used simple images to present their ideas throughout the semester. One interesting example was Ben. Ben pointed out that he had no talent for artistic work, but he drew every illustration for his blog reflections. Even though the pictures he drew were very simple

illustrations, they still showed that he transferred the information from the readings into his own interpretation.

Another interesting case was Shelby. She was a senior majoring in communications. In her personal reflection on learning with technology, she strongly asserted that she was not technologically savvy and did not like teaching. However, she had the most technology devices, including one laptop and two handheld devices, and she would join Teach for America after her graduation. Needless to say, I saw a lot of contradictions in Shelby, and this included her views on her visual literacy skills. She questioned me a lot about her choices of images in class. She said it was extremely difficult for her to draw or take pictures to show what she wanted to say; therefore, she did not post images in some of her reflections. However, her images in her reflection on visual literacy demonstrated contradictory views again. In her reflection on visual literacy, she described how she saw visual literacy in today's society and took two pictures to support her viewpoints. The two images perfectly explained what she believed and they showed that she truly had the visual literacy to help her audience visualize her thoughts; sadly, she was not aware of her skills.

**Table 26**

***The Participants' Examples Showing Their Visual Literacy Skills***

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Ben's drawings and illustrations



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“This is not a starfish, I swear. It is my attempt at drawing an anatomy app.”

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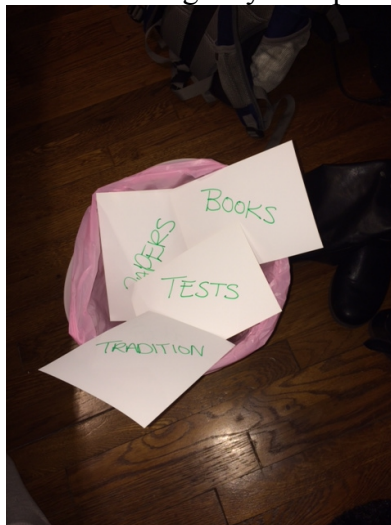
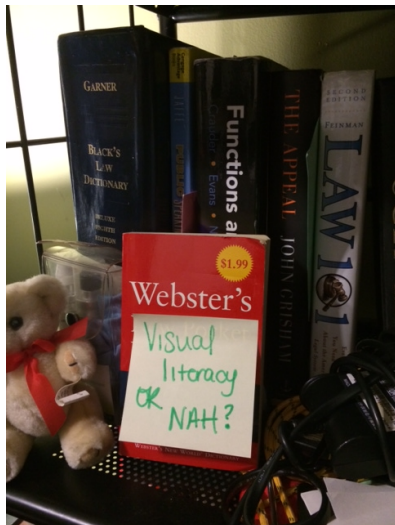


In his reflection on educational games, Ben drew this picture. His drawing showed that he was concerned about the budget related to buying equipment for every student. This concern was suggested in one of the reading materials, but Ben visualized the idea.

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Shelby's reflection on visual literacy

“Although I may be considered a ‘21<sup>st</sup> century learner’ I could not see myself helping others to develop visual literacy and do not see how it happens in our daily lives. I understand the integration of technology into the classroom but visual literacy is a concept that I am having an extremely hard time grasping. The two visual representations that I included for the purpose of this post were both pictures because I found this assignment particularly difficult. As stated before, I do not have a particular interest in the advancement of technology also making this assignment difficult. I posted a sticky note on websters dictionary with that statement because the ‘or nah’ (or not) phrase that has become popular amongst African American youth, and although I believe books may be replaced soon the acceptance of visual literacy has not come up yet. Additionally, my other picture has certain words on paper (tradition, books, paper, tests) in a trash can because these told forms of learning may be replaced by things like visual learning.”



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### **I Don't Need to Learn a Different Programming Language to Create a Website? Good To Know!**

The last sub-theme in the self-evaluation was about the participants' skills in Internet use.

From their reflection on personal use of technology in education, searching for information

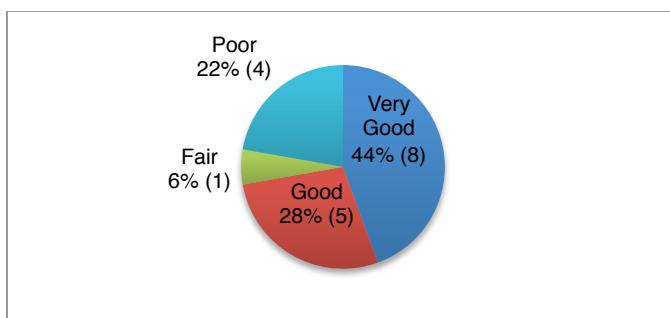
online was the main digital literacy practice they were involved with on a daily basis. Therefore, most of the participants were satisfied with their online searching skills. Only four participants consider themselves poor at this skill. One girl, Keira, was willing to share with the whole class why she evaluated herself being poor at this skill. Keira said that she felt overwhelmed sometimes due to a huge amount of information. She felt that she could not make that right judgment about the things she read. Sometimes she even lost focus on what she wanted to know. Therefore, she could not feel certain that what she found online was actually helpful. Keira's self-evaluation showed that her information literacy was not strong and this was a factor in her daily digital literacy practices.

Most of the participants evaluated themselves as being very good at searching for information online in the post-semester self-evaluation. Since this evaluation was conducted on the last day of class, there was no opportunity to ask all the participants to explain why. However, several of them gave their reasons in the interview. Keira indicated that one approach, discussion with her partners in the group projects and in her blog, helped her make judgments about the information that she found online for the class projects or the reading materials. For example, Keira's blog partner sometimes challenged her with different opinions about her thoughts, even though he was not active in posting and commenting on her reflections.

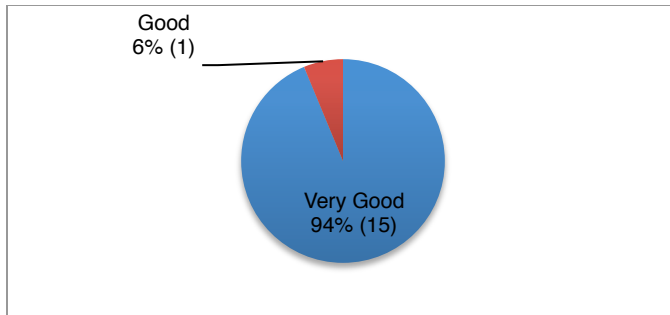
The class discussion activities also challenged Keira to think deeper about the reading materials. She gave an example in the in-class discussion activity about a video clip published by PBS. The video showed five innovative projects conducted in five different schools. Each participant recorded a personal reflection on this video and published on YouTube. They posted the video link in their blogs before coming to class. In class, we did a silent paper discussion. First of all, the participants needed to choose the most impressive project shown in the video and

formed groups with other participants who chose the same project. In that group, each of them had a piece of paper with a guiding question related to that project. They needed to answer the question and then passed it on to the next participant. Next, they made comments on the previous people's comments until all of the group members made comments on their original sheet. Then, as a group, they needed to summarize what they wrote on the silent discussion paper. Keira said the diversities in individuals' opinions about the same project in that silent discussion really helped her see the importance of always giving a second thought about what she found online.

Kate said that working with her partners for the group projects helped her learn how to search and use information found online more effectively, especially in a heterogeneous group. Their Learning Adventure Project was to create a website to help people who wanted to learn more about Rome. In Kate's case, the experience of working with *an expert* helped her realize that it was always good to ask for other people's opinions, especially individuals whose expertise was in that field. Another thing she learned from her peers was not to trust the search engines completely. Instead, she needed to find a good source to start.



**Figure 21** The 18 participants' pre-evaluation of skill in searching information on the Internet



**Figure 22** The 18 participants’ post-evaluation of skill in searching information on the Internet

**Table 27**

***The Participants’ Reflections on Their Skills in Searching for Information Online***

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Keira said that the silent discussion about the PBS video really helped her to see how other people evaluate the information they acquired. “You need to bring in your personal experiences, what you learned before or even maybe what you heard from others...Mmm...there are a lot of ways for you to think differently about the information. When you start to think about all these, then you kind of know whether this information is helpful or, you know, correct or not. Also, we responded to different people’s response differently. In the silent discussion, you can’t escape by only saying I agree. You actually need to write more. It is great for me to think critically.”

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Kate talked about how her experience in collaborating with *an expert* for her Learning Adventure Project helped her develop the critical eye for searching information online. “Fortunately, we had Roxanne in our group. She is a history major, and also a senior, so she helps us understand which websites are more trustable and have correct information about Rome. Oh, she told us that we should use the multi-search function on the library homepage, because that usually will give us some good resources to start. Google is not always good for searching information, especially for school work like this.”

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Another self-evaluation item in this sub-theme was about their skill in creating webpages or websites. Unlike the previous question in this category, most participants were not good at this in the very beginning of the semester. Learning how to create websites and webpages was another goal that a few participants wanted to achieve in this class. When we discussed this topic, several participants expressed their fear about learning a different *language* to create a website. The result from the pre-semester self-evaluation implied that the 18 participants mostly played a role of consumers rather than producers in their daily digital literacy practices of Internet use.

All the participants needed to create a blog for their reflections on the reading materials and the course projects in this research project. Wordpress™ and Blogger™ were introduced to all of them as blog host sites, but both could be used to create a simple website as well. Another web-hosting service introduced to the participants for the Learning Adventure Project was Weebly™. Several participants were not willing to create an account on Weebly™, so they chose to use Google sites to create their Learning Adventure websites. All four sites were easy to use, especially Weebly™. Most participants who used the templates on Weebly.com were very pleased and satisfied with the easiness of all the features. One participant specifically described how her partner who had experiences in constructing a Weebly™ website before taught her step-by-step to put all the pieces together to create an instructional website. Most participants described how they did not need to worry about the technical problems or learning curves, but instead, they could spend much more time and energy working on the content which challenged them to be creative and to think critically.

Shelby noted that the project of creating an instructional website was actually two projects in one. She learned how to develop an entire curriculum about one essential question and then how to create a website that could deliver the curriculum to people who were interested in the question. It took a lot of time and attention, but she thought it was worthwhile. As a major in communications, it was still very significant for her to learn to “evaluate what tools are needed to teach others, as well as the medium through which we can deliver them” (quote from the interview with Shelby).

## **Table 28**

### ***The Participants’ Reflections on Creating a Website/Webpage***

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“I really enjoyed constructing my website. I thought it would be difficult to create, but the Weebly website made it very easy. It was more difficult coming up with content because my website is tailored for adults and not children.” (Janet)

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“Constructing a website was a lot easier than I thought. It was actually quite fun! With three of us working on this project, it took no time at all. It was fun to play around with all of the features on the weebly site.” (Sonia)

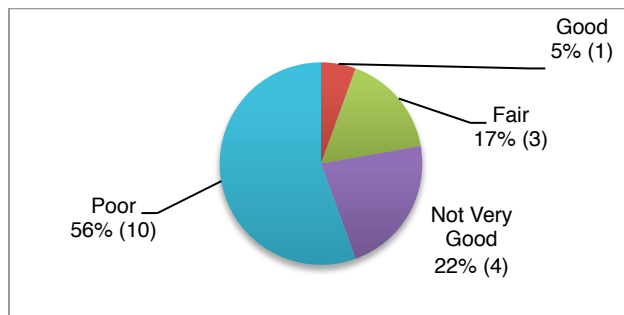
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“I have previous experience constructing websites so this is not new to me. Because of my past experience, I was ‘in charge of’ the web aspect of this project. Although I have made websites in the past and used Weebly, this time was different. I was able to explore new tools on the website and I was able to develop a more advanced website. I had never used links in my previous websites and I used multiple links in this site.” (Keira)

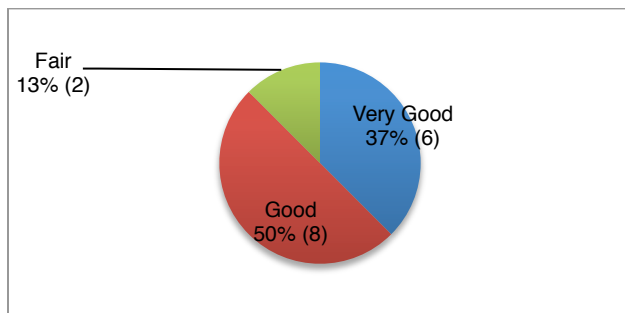
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“I’ve created blogs in the past, but this was my first time creating a website such as this one [Learning Adventure]. Keira had previous experience creating a website, so we put her ‘in charge’ of putting the website together. I learned a lot from the project by shadowing Keira. She showed me all the steps I needed to take to add pictures, upload PDF files, and include links on the website. I feel confident that I will be able to create another website like this one in the future.” (Molly)

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**Figure 23** The 18 participants’ pre-evaluation of skill in creating website/ webpage



**Figure 24** The 18 participants’ pre-evaluation of skill in creating website/ webpage

### **Skills In Organizing Ideas and Presenting It For Audience**

During the interview, several participants described how the blog practice helped them sharpen their writing skills for a real audience. Some of them compared the blog practice to an online discussion, while the others compared it to writing a final paper. However, they honestly acknowledged that they learned skills that they could not learn by participating in online discussions and writing final papers. Writing blogs helped them connect with people they did

not know but who probably shared similar interests. Thus, they were willing to spend much more time in clearly organizing and presenting their ideas.

Chuck told me that he really learned how to convey his interest in using games in education for people who shared the same interest. Roxanne was not his partner, but Roxanne said she started to read Chuck's blog after she heard him talking about it in class. She found it helped her organize her ideas for her 20% Design Project, which was to develop a game for a history class. Chuck told me in the interview that he was thrilled to know that Roxanne was following his posts after she told him during the break. He admitted that that motivated him to research more and to write more like he was dialoging with people like Roxanne.

Lindsey said that the multimodal presentations in the blog helped her organize ideas not only in writing but also in podcasting. When Lindsey read that they needed to record a video clip for reflection, she said that that almost gave her "a heart attack!" She spent a lot of time working on her ideas and rehearsed several times on her own and with her roommates. Following her roommates' feedback, she said she became more confident in clearly elaborating her thoughts in front of the camera.

What Amy shared with me in the interview could summarize the skills that the participants learned about writing and organizing their ideas for others. She said that "writing the blog got me to where I would write every post out on a piece of paper, read it a couple of times. And then I would type it, found pictures that I thought would go with it...I just wanted...um, I wanted much more time on my blog, because these blogs that other people made, they didn't just write randomly, they spent time finding pictures and writing their ideas...clearly, to make everything work together. And I wanted to have that kind of skill too." By keeping a blog, Amy learned to think deeply and critically. In addition, she learned how to present herself

in the way she wanted others to see her. This was the I-positions in her digital literacy practices that will be discussed in the second half of this chapter.

### **The Participants' Attitudes Toward Their Digital Literacy Practices**

The attitudes of the participants were one of the three main themes in the first research question. When I was reading all the data, the following sub-themes related to their attitude emerged from the data. Due to the abstractness of attitudes, it was easier for the participants to describe their attitudes in words rather than using other modes. Therefore, there were less data than in other modes that were presented in this section.

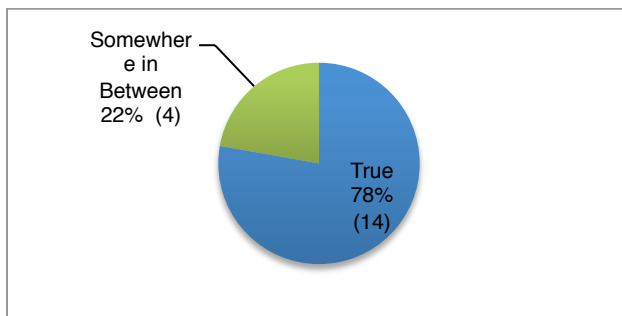
#### **Attitudes Toward Technology**

The first sub-theme about the participants' attitudes toward technology was generated from the student information sheet completed by the 18 participants in my class. The participants were asked about their attitudes toward technology. I was interested in knowing the relationship between their attitudes toward technology and their attitudes toward their digital literacy practices.

Figure 24 shows that 14 participants in my class liked technology, while the other four participants were somewhere in between liking and disliking technology. The most common reason that the 14 participants gave for liking technology was because of the convenience technology offers. It was easy to obtain the information that they needed or to accomplish the tasks they needed to. For example, one participant indicated that she could take the quiz on the way to class if she was late and thus would not miss the quiz. Several participants mentioned that searching online for information was easier and faster than searching for the information in books or spending hours in the library. With the function of searching for keywords in documents online, they did not need to browse or scroll down through the pages. Instead, the tab

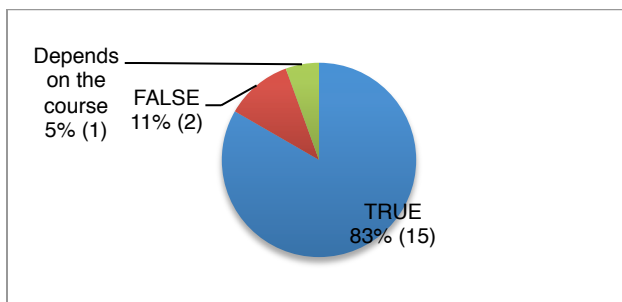
key would take them to the next keyword. It was obvious that the 14 participants embraced the affordances that technology offered. However, it implied the lack of deep learning.

The other four participants expressed a more neutral attitude toward technology. Two participants explained why they positioned themselves somewhere in between “like” and “dislike”. Joanna and Jack affirmed the conveniences of technology, but at the same time, they also expressed that they were not comfortable with the overuse of technology in every aspect of their life. Joanna’s artifact of the connection between social media and herself and Jack’s artifact shown above exemplified their concerns about the overuse of technology.



**Figure 25** The participants’ attitude toward technology use in education

When the participants in my class were asked to answer whether the statement that technology use was a must in 21<sup>st</sup>-century classroom was true or not, 15 out of 18 believed that it was a true statement, two participants said it was a false statement, and one said it depended on the courses the students were in.



**Figure 26** The participants’ attitude toward the statement that “technology is a must in 21<sup>st</sup>-century classroom

One of the two participants who thought it was a false statement indicated that there are always other ways for teachers to teach and for students to learn. Technology might be helpful and effective, but it is certainly not necessary. One of the participants emphasized that books was a means of technology that we can never put aside, but teachers can still use books and other technology tools to help students learn better. The participant who believed that it depended on the courses the students took expressed the similar idea that technology might “open up far more windows of thought and creativity but not a promise” (quoted from the student information sheet survey). In summary, the three participants held a neutral attitude toward technology use in education and still believed that traditional reading and writing were as important as their digital literacy practices.

Compared to what the three participants believed, the other 15 participants showed a much stronger belief and more positive attitudes toward technology use in education. The increasing need and application for technology in everyday life was the major reason for the 15 participants to believe that it was a true statement. They believed that students were familiar with using technology in every aspect of their lives. They believed that teachers could create a more engaging and interesting classroom for students if they knew how to effectively use technology. Therefore, it could be concluded that the 18 participants in my class had positive attitudes and firm belief that technology could enhance 21<sup>st</sup>-century classrooms.

## **Table 29**

### ***The Participants’ Attitudes Toward Technology Use in Education***

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Kate rationalized in the information sheet that “I think it’s a must because technology is all around us. It can help enhance our learning in a positive way.”

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Roxanne, majoring in history education, stated, “If you don’t use technology you are limiting not only the teaching methods available but also the amount of information that can be accessed. Technology allows the teacher to diversify their lessons and the students to more easily research needed information.”

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The following sub-themes related to the participants' attitudes toward their digital literacy practices were generated from all 33 participants' first two reflections on the two readings about technology use in education. One was the first chapter, "Goal of Technology Integrations: Meaningful Learning", in the book entitled *Meaningful Learning with Technology* (Howland, Jonassen, & Marra, 2012). The other one, *the Horizon Report 2013*, was an annual report about technology use in higher education and K-12 education published by the New Media Consortium. The participants could choose to read either the higher education version or the K-12 education version based on their personal interest.

There were 20 participants who did not major in education in this study. Therefore, there was a need to help them realize why technology use is an important topic in education. From their reflections on these two reading materials, several sub-themes could be formed to understand some changes in the participants' attitudes toward their digital practices and development. Some statements in other reflections related to their attitudes were quoted here too.

### **Technology Can't Teach Me?**

The participants were surprised to realize that they did not learn from the Internet or a PowerPoint® presentation. Instead, they were supposed to learn with the help of technology tools. Technology tools provided them with multiple opportunities to create meaningful learning experiences, to communicate and collaborate with others, and to produce and present what they have learned. Their surprise was aligned with their low awareness of the possibilities of using technology to help them learn.

After reading the articles, some participants still believed that the Internet was teaching them. Two participants indicated that the statement that "technologies are no more effective at

teaching students than teachers” was the biggest surprise to them, because they believed they learned more from the Internet than from the instructors in some of their classes no matter when and where they were. Shelby rejected the statement in the reading material and made her argument in the reflection that people still could learn from technology with the example of online courses. However, her argument demonstrated her low awareness of educators’ role as curriculum designers. Course contents were still designed and created by teachers rather than technologies.

Most participants had a change in their attitudes after reading the first material. They mentioned that they viewed teachers and computers differently. At the same time, some of the participants suggested that their change in attitudes toward computers further changed their attitudes toward schoolwork. This indicated that some of the participants started to take a more serious attitude toward their digital literacy practices and were becoming more willing to cultivate their digital literacy, because they realized that technology was supposed to help them demonstrate what they have learned.

### **Table 30**

#### ***Sub-Theme: “Technology Can’t Teach me?” in Text Mode***

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“As a millennial, I have grown up in an era where technology is used for everything. It has helped to arguably make my generation lazier and unwilling to go the extra-mile. However, I also feel as though since my generation has always been surrounded by technology, at times teachers and professors require us to teach ourselves or assume we know how to use technologies. Yes, using technology is helpful for students in the learning process, but it is also on the educator’s hands to maintain a standard and practice of how to teach their students; to not completely let go of the student and allow independent learning through technology, but rather replace the child-leash with holding hands if that makes sense.” Jack was the one who held a critical attitude toward technology use. He thought technology made his generation lazy and opined that both students and teachers erroneously think that technology can teach people. After reading the materials, he thought learning should be like a co-construction in which teachers held students’ hands to help them move on in the journey together.

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Patty wrote in her reflection that “This idea (learning with technology, not from technology) changed my idea about technology because before I thought that technology was a way for students to be lazy and do less work for themselves.” After she summarized what the authors

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emphasized, she wrote about her attitude toward technology again. “The addition of technology in the classroom has the potential to expand learning far beyond the realm that we already experience. The addition of technology can provide students with a chance to learn more than they would have before.”

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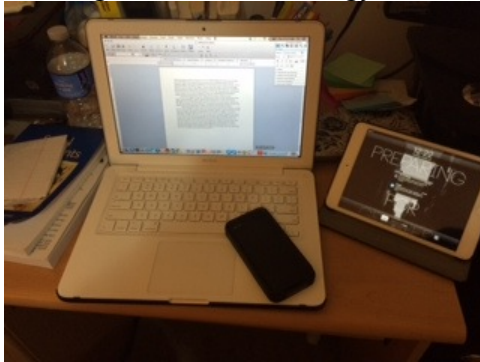
Keira illustrated this idea with her observation of a speech therapist last semester. “I have observed multiple speech therapists. One professional in particular simply puts an iPad in front of her patients and provides minimal guidance and scaffolding. I have often questioned: How is this speech therapy? How can the student learn? This chapter really hit me. I realized that the apps and technology that fill my Pinterest board are useless instruments unless I play an active role in the delivery of the information and content. Technology is only powerful when students are engaged and encouraged to think deeper.”

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Ethan, a non-education major, wrote the following in his reflection. “I am not an education major I was under the impression that one day technology could replace teachers entirely—similar to the replacement of manufacturing jobs with robots. However, after reading the chapter my idea has changed. I know now that technology can not convey or communicate meaning. Technology is merely a tool used to represent ideas, and makes it easier for educators to communicate meaning to their students.”

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Shelby’s argument for learning from technology—“Although I am sure they had a great amount of proof, for some reason I still feel as though technology can teach students. I continue to think about online classes and degrees that are earned online. Is that not a form of technology teaching? I honestly believe that at the rate we’re going technology could become a teacher in a sense and people can learn things from them instead of with them as the article somewhat suggested.” She took a picture of all her technology devices to support her argument that she was learning from the technology.



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### **Neither My Teacher Nor I Use Technology Effectively!**

The second sub-theme about the participants’ attitudes toward their digital literacy practices was related to the participants’ previous learning experiences. That is, it concerned whether their teachers were not proficient in technology use in education and thus the students had limited digital literacy development. What teachers and students did was transform paper-based learning and teaching activities to screen-based activities.

The participants were seldom or never aware of the possibilities of using technology for their learning. Their digital literacy skills stopped at the basic level. Therefore, their attitudes toward their digital literacy practices were vague. What they saw and experienced in K-12 education or in their early college years was what they believed about technology integration. Several participants realized that what they did before was the traditional way of using technology in the learning process. However, some participants were still having a doubtful attitude about how they could use technologies to help them learn better after reading the two documents.

From their personal reflection on previous learning experiences, it was obvious that most participants used technologies with a narrow definition of hardware usage. Therefore, most participants were extremely surprised to know that so many technology tools, software programs, or applications could be applied to the learning process when they read the Horizon Report. They even did not know of or had never used some of the technologies mentioned in the document. Only two participants had experienced the BYOT program in high schools. Therefore, these two participants had a more positive and promising attitude toward using technologies to enhance their learning and more confidence in their digital literacy practices.

A few participants embraced the new technology trends immediately. Knowing the great potential that the advanced technologies could bring to education made them excited. For example, they considered how they used the tablets and smartphones in their learning process to support the idea of the popularity of mobile device learning. Their excitement motivated them to explore new applications when they were looking for programs to introduce in their commercial project.

On the other end of the spectrum, several participants reflected on the use of mobile device and started to question the effectiveness of using them, because they believed it became easier for them and their peers to be distracted due to the easy access of mobile devices. Some participants still wondered how these technology trends could be effectively put into practice in K-12 education while the resources and funding were so unevenly distributed in the states. One participant, Ethan, retained a cautious and skeptical attitude toward the current education system. After learning more about emerging technology tools, the participants developed a more critical attitude toward using technology effectively in classroom and a more doubtful attitude toward their digital literacy skills.

This sub-theme again appeared in the Expand Your Learning Circle Project. When the participants were asked to critique an assignment or a presentation they had in another class, they pointed out the boring design of instructors' presentations, wordy handouts composed in Word®, or assignments asking them to write several paragraphs or pages using word-processing tools. This project was due in the last month of the semester. At that moment, the participants' awareness of meaningful digital literacy practices was strong and their technological skills had already improved a lot. As a result, the participants demonstrated a strongly positive attitude toward their digital literacy practices and presented many creative ways to redo the assignments or the presentations in other classes. They were confident that their redesign would help students in those classes learn better.

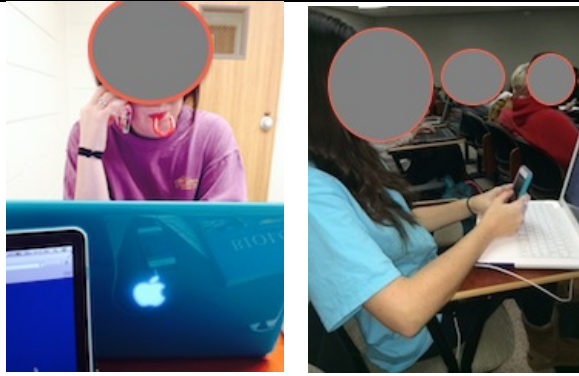
### **Table 31**

#### ***Sub-Theme: "Neither My Teacher nor I Use Technology Effectively!" in Different Modes***

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"I believe it [technology use in education] can be bad because it is distracting. Access to the Internet means access to Facebook, Twitter, Instagram, BuzzFeed, etc. I personally am distracted when I have the access to those websites. And I don't see how I can use these tools in helping me learn better." (Amanda)

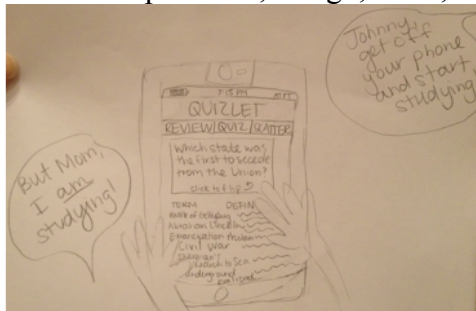
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Amanda and Keira showed how their peers were distracted by the mobile devices in their personal study time and in class.

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“Technology greatly helps the learning process. In my experience as a student, I feel that I have learned more efficiently due to technology”, said participant Sonia. She drew a picture to show how a flashcard app could help students memorize the information and knowledge the teachers wanted them to learn. However, after reading the documents, she realized that this kind of technology use was not sufficient to create meaningful learning. She wrote, “There are many important goals for students, and they can only be achieved by using technology that helps the students experiment, design, write, collaborate, and visualize, just to name a few.”



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“As technology becomes a more essential function of our day to day lives, how will the education system adapt to these changes? For instance, studying for tests and quizzes seems to be a thing of the past. Today I can access every crevice of human knowledge in a matter of seconds using a screen that is kept in my pocket 24/7. The need to memorize formulas, or even know how to spell correctly is dying. How will the education system respond to these changes? There needs to be a shift in how we learn. Why not let kids use their smartphones while taking tests? Surely they will be able to in the real world”. Ethan was not quite sure about how the current education system would react to the change while technology was in the leading role.

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Jack’s anecdote about his science class in high school. “ In my high school chemistry class we used podcasts to learn new material. My teacher would send us the link to the weekly podcast that another teacher in the department would make and we would spend all of that class time watching them individually attempting to learn various formulas and elements. Chemistry is a challenging subject and science is not my strong suit. I once asked my teacher a question about what we were doing and she simply told me to re-watch the podcast. Essentially we were taking an online class taught by someone else. I remember being dumbfounded and outraged that she wouldn’t teach me and then sent me away when I reached out to her. Since that day, I have had a very negative opinion about over-dependence of educators on technology as a tool to teach. I understand the benefits of gamification and technological literacy and everyone enjoys a tablet, but I have seen the negatives. Simply capitalizing on new technology is not enough. I fully-

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heartedly agree that to be used, technology must engage students on a deeper level.”

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### **Knowledge Construction or Just Information Acquisition?**

The third theme from the participants’ reflections was that 21<sup>st</sup>-century learners were students who engaged in learning with the help of technology and thus developed the ability to construct knowledge rather than just absorb information. The participants realized that in their digital literacy practices they basically acquire information most of the time. Without being engaged with the materials, there would be no learning or knowledge construction.

Several of the participants acknowledged that they never thought about using technologies to help them construct knowledge. Instead, they were mostly acquiring information when they thought they were doing research online. Coco described her surprise when she read how the authors compared information delivery to grocery delivery in the reading about meaningful learning with technology. Then she realized that what she did with online research was just like buying pizza or fast food made by others and she just ate it without having a second thought about the food. Several participants described the statement as eye-opening and claimed that it truly changed how they viewed the possibilities of technology use in their learning. The participants started to assume a critical attitude toward their digital literacy practices and to question whether they or other educators were using technology appropriately to create meaningful learning experiences.

A good example was Jack’s critique. Jack reflected on his personal learning experiences and critiqued his science teacher in high school who used podcasts but refused to work on solving problem with them together. Jack compared his science teacher to an instructor he had on the university campus. The university instructor banned emerging technologies, the students’ laptops, and smartphones in class; instead, he used the old technology of traditional paper-based instruction. However, Jack learned more from this technique than from watching the podcasts in

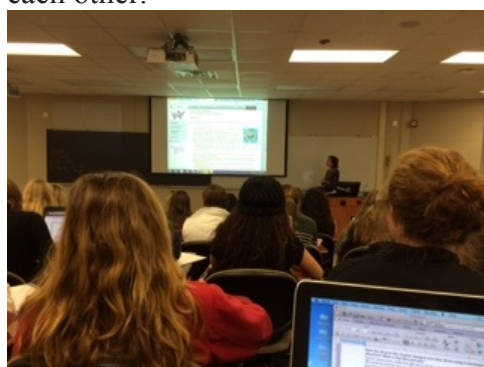
his high school science class. Jack believed that the keys to effective use of technology in education were the instructor and the design. When instructors design good literacy practices, then students definitely learn better no matter whether they make use of old or advanced technologies.

### **Table 32**

#### ***Sub-Theme: “Knowledge Construction or Just Information Acquisition?” in different modes***

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“I like how the point is made that knowledge cannot be delivered, but information can. It shows that technology cannot just be used for a student to learn and the teacher must correctly implement it. The article also talks about how teachers ought to know how to integrate this technology into their instruction. In a study, it showed that teachers should have pedagogical knowledge and not just content knowledge. With that being said, I think technology can be useful to learning if it used correctly by the teacher and students.”—A quotation from Amanda’s reflection. She used a picture to explain that she learned a lot about special education last year, because the professor created Jeopardy to get them be engaged in learning and interacted with each other.



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“One of the points in this chapter that stood out to me as a future speech therapist that could be possibly working with teaching children was that only information can be delivered, not knowledge. I believe that this is an important concept for educators to understand. As the chapter pointed out, teachers all too often assume that their own knowledge is understood by their students. This dilemma is what makes technology so wonderful because it provides a resource for students to turn information into knowledge.” (Cameo)

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This sub-theme of the participants’ attitudes toward their digital literacy practices appeared again in some of the participants’ reflections on their 20% Design Project and the Learning Adventure Project. Some participants believed that the digital literacy practices they designed would give learners the opportunity to be more engaged and thus they could construct knowledge rather than merely acquire information. Coco, Keira and Molly were proud of their

Learning Adventure Project. They created a website with the focus on film education in the 21<sup>st</sup>-century learning. They used the film *Finding Nemo* as their example to teach children literature, science, geography, and culture. They created different worksheets and hands-on projects for learners to complete while interacting with resources on the site. Table 21 shows some of their designs for this project. During the interviews, all three of them said that this project was the most meaningful project in which they had the opportunities to practice what they had learned throughout the semester. They mentioned that they actually learned more deeply about all the knowledge that they wanted their learners to construct. They realized that when educators are creating a good design for their learners, the educators themselves actually benefit from the design process as well. In addition, educators need to be familiar with the digital literacy practices before they ask their learners to employ them. The three participants became much more confident in their technological skills after finished this project.

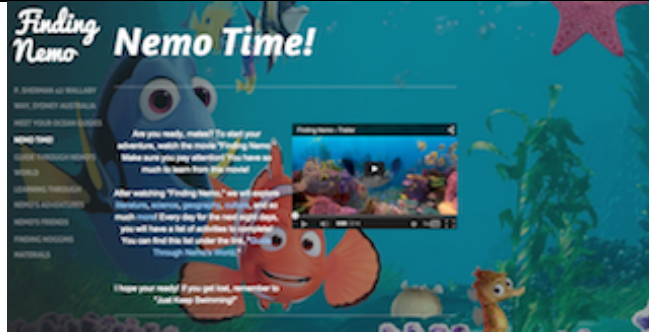
**Table 33**

***Coco, Keira and Molly's Learning Adventure Project Sample Pages***

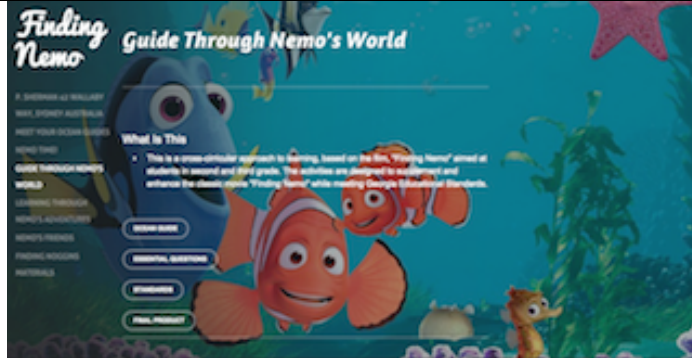


*Finding Nemo* homepage with essential questions that they wanted their learners to learn

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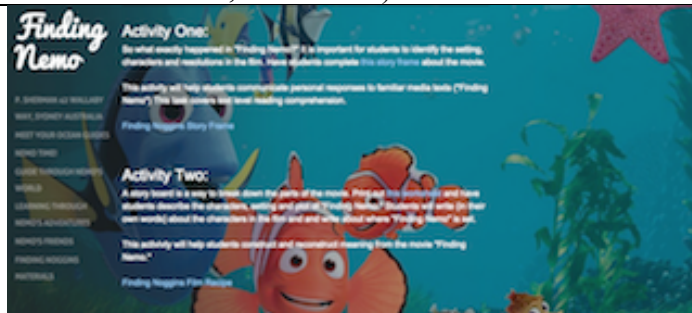
*Finding Nemo* Introduction—basically about what their learners could expect to learn



*Finding Nemo* Standards—listed standards from Georgia Performance Standards for literature, science, geography, culture, and standards about technology from other resources



*Finding Nemo* Literature page—list of learning materials (in other subjects, they listed books, external websites, and videos)



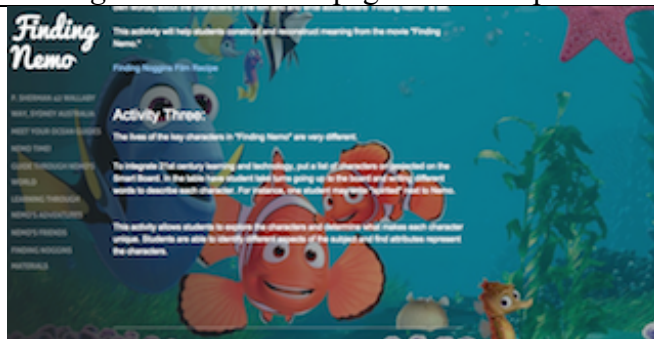
*Finding Nemo* Literature page—list of activities



FINDING NEMO'S FILM RECIPE  
FILL IN THE BLANKS TO DESCRIBE THE CHARACTERS, SETTING,  
AND PLOT OF "FINDING NEMO"

NAME OF CHARACTER	WHAT WAS THIS CHARACTER LIKE?
WHO?	WHO?
WHAT HAPPENS AT THE START?	HOW DO THE CHARACTERS FEEL?
WHAT DO THE CHARACTERS DO?	HOW DID IT WORK OUT?
HOW WERE THINGS AT THE END?	WHAT IS THE MORAL OF THE STORY?

*Finding Nemo* Literature page—an example of the worksheet they created



*Finding Nemo* Literature page—an example of an activity requires learners to use emerging technologies. In this case, they would use a Smart Board.

### Being Open-Minded and Coming out of the Comfort Zone

The last sub-theme about the participants' attitudes toward their digital literacy practices in the technology-enhanced, multimodal, dialogical learning environment was keeping an open mind. When the participants were asked to make a commercial for a technology tool or a software program, I strongly encouraged them to choose a new tool that they never tried before. Some participants took my advice and told me that it was a rewarding experience.

In the Expand Your Learning Circle Project, the participants were asked to redesign an assignment or a presentation from another class with the aid of technology. Again, they were encouraged to try some new software programs. For example, an e-poster software program or an infographics software program could be good choices to use for redesigning a presentation. Some participants did try to use new tools for projects throughout the class. The participants

tried new programs not merely because of Maggie's or my advices but also because other participants had tried using different tools, which changed some of the participants' attitudes.

A few participants told me during the interviews that they had learned that they need to be open-minded in order to keep themselves updated with the trend of using technologies to represent themselves or to communicate with others. One participant, Julianne, also said that there might be possibly a technology tool for everything. Just because she did not know about a particular tool did not mean that it did not exist. Therefore, she needed to search for the best tool to achieve her goal. The change in her attitude demonstrated her development in media literacy.

### **The Participants' I-Positions in Their Digital Literacy Practices**

In this research study, the participants kept interweaving their past learning experiences with their current learning experiences. They needed to talk about what kind of learners they were before and what kind of learners they are now. At the same time, they needed to switch roles between learners and teachers. The role of a teacher was an imaginary one for most of them. Therefore, it was more challenging for them to picture themselves with all the expectations they would have of a teacher.

For discussion, they talked with their peers and the instructor in the same classroom. In addition, they also talked online with their partners who did similar projects and read the same materials without meeting and knowing each other. Sometimes they had unexpected readers on their blogs and this opened yet another conversation. The participants' I-positions were definitely changing a lot in this technology-enhanced, multimodal, dialogical learning environment. It was important to find out what happened to the participants' I-positions, given the many roles they were playing and the interactions going on in their learning process.

As indicated in the literature review, the way an individual thought of himself would have an impact on how he interacted with others. The words an individual uses always initially come from others. However, when the individual makes a new utterance, he gives a new meaning of those words (Bakhtin, 1986a). The new utterance represented the individual's understanding of others, the world, and himself. A dialogical classroom would create a space where teachers and students could bring in diverse voices to facilitate what Bakhtin (1981) believed as responsive understanding. In this study, a dialogical learning environment was found in the physical classrooms as well as the virtual space of the 33 participants' blogs. Data related to the participants' I-positions were collected from the 33 participants' blog postings and comments, the instructor's observation notes in class, and the photo elicitation interviews with 13 participants from both classes. However, due to the abstractness of the concept of I-positions, most of the supporting quotes were from the interview transcripts. Four main themes with several sub-themes are presented in the following section to answer the second research question, which was about the participant's I-positions in this technology-enhanced, multimodal, dialogical learning environment.

### **Put On A (Future) Teacher's Hat**

The first main theme for the participants' I-positions was that they played the role of a teacher. More than half of the 33 participants in this study were not education majors. Even though I had made some changes to the topics addressed in this class so it would be appropriate for the participants in their personal learning, there were still some projects that required the participants to think as educators, and moreover, to design teaching materials. In those projects, the participants could choose to think of themselves as K-12 teachers, college instructors, or personal tutors in any subject. Their students could be anyone from a toddler they were hired to

babysit or members of an older generation who needed to learn basic computer skills. The learning setting could be formal or informal. The participants had great flexibility to design learning activities and materials that should be included in these projects.

When the participants were describing their designs, they referred themselves as teachers or educators. The education majors usually adopted what they have learned in other education courses to support their designs. As for non-education majors, they used their personal learning experiences with teachers in previous schools or classes to support what they designed for their projects. Some non-education majors considered themselves as parents who would also be educators and they further described how their designs would work for children.

In the participants' reflections on the assigned reading materials, they frequently described their supporting ideas or arguments from an educator's perspective. Once they articulated their beliefs or arguments, they usually moved on to the expectations of their future selves or their role as teachers in the 21<sup>st</sup>-century classroom. They would clearly summarize what 21<sup>st</sup>-century teachers should do with their students, students' parents, and colleagues in order to create more significant and meaningful learning experiences. Some participants would delve into the topic of their teaching careers in order to talk about their concerns and worries, whether or not they were education majors.

#### **Table 34**

##### ***The Participants' Quotes about Seeing Themselves as (Future) Teachers***

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“If I were a teacher I would want my class to be more about real concepts students would need for life and less about what it takes to pass a standardized test.” Amy, a non-education major, wrote this sentence in her reflection on augmented reality. She believed that augmented reality allowed students to learn actively about the knowledge rather than merely having the knowledge crammed into their brains.

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“As a future teacher I will try to find visual images or videos that cover what we are going over in class. This will allow students to get a visual image of how things work and why they work like they do.” Lori, who was not clear about visual literacy before, stated that she would love to try to use more visual aids in her future classroom.

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“I have learned that as a teacher, you always need to be looking for things to better adapt to the children of the generation to create better opportunities and help them learn as much as they can.”

“Before reading articles and watching these videos I didn’t think gaming would be beneficial to learning in a classroom, but I can say that those few articles I did read have changed my mind. From an educator’s perspective, I understand how games can benefit a student if they sit back and really deconstruct what they have just learned through a game.”

These two quotes were from Amanda’s reflections on the 20% Design Project and on visual literacy. Her focus concerned teachers’ attitudes toward emerging technologies and how she saw emerging technologies would work in the 21<sup>st</sup>-century classroom.

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In Molly’s final reflection on the 20% Design Project, she emphasized her belief in becoming a teacher. Later in her interview, when she was asked about what she learned in this multimodal, dialogical learning environment, she said she was a little bit surprised that this environment reminded her of learning experiences in childhood. “A teacher’s job is not simply to provide information, but to actually teach skills to students. You don’t just learn by reading a book or listening to your parents...You know my mom is an elementary school teacher, so she is a teacher at home too. We learn a lot by just listening to her, but not just that, we learn with curiosity and try everything too. I think this is so important! You are teaching us how to be a teacher by modeling everything in class and you...mmm...kind of force us [laugh] to do a lot of things too. It’s like the old saying that if you give a man a fish, you feed him for a day, but if you teach him how to catch a fish, then you are feeding him for a lifetime. So I want to be that kind of teacher.” Molly expressed the expectations of her future self by remembering what and how her mom taught her, delving into the reading materials, and observing me throughout the semester.

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“Technology is taking over the education system so as a future teacher I must embrace the change. Using technology in the classroom does not have to be as complicated as I thought...”

“As a future teacher, I would definitely incorporate visual literacy into my classroom...it would be a small commitment to make a big impact.”

Joanna used the phrase “as a future teacher” a lot in her reflections. In her interview, she also said that phrase frequently. She not only asserted what she would definitely do in the future but also raised a lot of question to her future self about what would be the best and most effective ways to help her students. Then she used her current self, who was a college sophomore education major, to answer the questions from a student’s perspective.

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“As a future Speech Pathologist, it is imperative that I stay up to date in current technologies...” from Keira’s first reflection. Keira described herself as a *future speech pathologist* more frequently in the first few reflections. Later that semester, she used the term *speech pathologist* directly. Based on my observation, I felt that she gained much more confidence in being a speech pathologist who would be good at integrating technology to help her patients. Her last three projects were fully developed and very well-designed. In addition, she even critiqued her original ideas for the 20% Design Project after reading some articles and meeting with several speech pathologists. Her confidence in seeing herself as a speech pathologist was beyond what a freshman usually had.

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Gina’s Quotes from the interview

“I was not tech savvy, not good at it. I need to have patience with computers...Um, I saw myself behind my peers in using technology...for example, a lot of students in high school were already good at typing. They could type without looking at the keyboard and typed really fast, but I was not. And my teachers in high school were not tech savvy either...they actually didn’t use much

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technology. But I learned a lot in this class. I see Ms. Maggie used a lot of different things to talk about one idea and she taught us to use many different tools. Now I see myself as a tech savvy college student..and I see myself as a more creative, innovative, critical good group member. Also, I can see myself teach children how to use technology to solve math problems or science projects...”

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### **Seeing Oneself as a Teacher and as a Student at the Same Time**

The second theme about the participants’ I-positions was the role switching between that of a teacher and that of a student. This theme was particularly obvious in the Expanding Your Learning Circle Project in which they needed to give a critique on the original design of a poorly-designed assignment or class presentation from a student’s perspective. Then they needed to switch to the instructor’s perspective to redesign the assignment or the presentation in order to motivate and engage their students. In other projects or reading reflections, some participants also switched the role between a teacher and a student in order to talk about their opinions. They kept switching between their roles of a teacher and student not merely in the current physical classroom but also in the virtual blog discussion.

The 13 participants in the interviews, especially the non-education majors, acknowledged that the role-switching was very challenging and even a little bit annoying in the very beginning of the semester. The non-education majors said that they could not think as teachers in the very beginning. However, practice did make it better. They felt it was easier for them to switch between the two roles as time went on. Two sub-themes were generated from the participants’ interviews.

**Ha! I’ve Got Your Point Now!** Several participants affirmed this role-switching experience as a very rewarding one, because they said it gave them different perspectives to think more about what they were doing in other classes. They started to think about the objectives of the class activities or papers. For example, two participants were impressed by the Expanding Your Learning Circle Project and thought that I should share their redesign

anonymously with their instructors in order to let their voices be heard. When they did the critique, they learned to appreciate what the instructors wanted them to learn. However, they firmly believed their redesign would keep that main point but added a little bit *spice* to it.

**Mmm... Empowerment!** Another important sub-theme from the role-switching practice was the empowerment that the participants felt. Most of the participants thought that the Expanding Your Learning Circle Project was very challenging. First of all, it was difficult to find an assignment or a presentation to change. Most of the participants were used to taking their instructors' assignments and lessons for granted. Even though they would complain, they usually merely grumbled that it was too much or too difficult. They never imagined that they could give advice on how to change anything on the syllabus.

Several participants scheduled an individual meeting with me during the semester to show me what they wanted to redesign or to ask me to give them more directions. Amy actually brought three syllabi to show me and asked me to choose one assignment for her. Therefore, I spent a little bit of time in class to explain this project to them and used one participant's idea as an example to help the other participants know what they could possibly do. One point I made clear was that this was their choice, not any other person's. They had the power to change something they did not like.

Amy told me that it was a very eye-opening talk to her. She was not able to make the decision was because she did not think she could do that as a freshman. She did not think she had the professional knowledge to change anything developed by a professor with many years of experience. However, after I explained the project to her personally and in class, she felt that she was empowered to make maybe just a little change.

Coco said that what really changed her way of thinking was the Expand Your Learning Circle Project, because that project started from the students' perspective about why they did not like the assignment or the presentation in another class. Then she felt that she was empowered to change the assignment or the presentation for that instructor. She felt that her voice could be heard.

### Table 35

#### *The Participants' Quotes about Seeing Themselves as a Teacher and a Student at the Same Time*

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Another example was Julianne. She discussed how she kept switching her role between a student and a teacher for her 20% Design Project. She designed a website to teach high school students to develop photo literacy, because that was what deeply impressed her among the reading materials in this class. She said that she imagined herself as a teacher in her "photo-literacy project." Therefore, she needed to think about what she wanted to talk about as an educator, but she also needed to think about what her students needed to know and what would motivate them. During the interview, she said, "For me, you know, I am a communications major. It was very interesting to see photo and video editing from a different point of view and for different purposes of use. But it is really helpful. I can still use this idea in the future to teach maybe my colleagues, especially you know I am going to start my first official job as a PR practitioner in August. Who knows what I need to create or publish? So I really enjoy the skills I learned in this class."

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Coco expressed similar idea to Julianne's idea during the interview. She was confused about the roles she played in all the projects. However, she thought she learned a lot from this role-switching experience. "I learned a lot about the user experiences in that redesign project...um, or I think I should say in this class, actually. How do you make people learn? What is important for them to learn? I think we focus a lot on our audience, we think as our audience, but at the same time, we think as ourselves who are teaching people to learn...and we learned how to do it through the projects we did in this class...I guess I am a learner but also a teacher, or, um...a learner learning how to be a teacher? [laugh]...sorry for confusing you."

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Janet: "My favorite project in this class? Um...the design one. I think.

Justine: you mean the 20% Design project?

Janet: No...um, the redesign one, you know, the one I designed a poster about Zara...

Justine: Oh, yes, I remembered that one.

Janet: Oh, Justine, I really hope you can share my redesign with my instructor! I think that was what you want, right? You want us to think as a teacher...and you know what? By reading the description about the original design, I totally understand what he wants and why this is important to a student...but it's just the format. In that case, you can also show your creativity, I don't know...the original way is just...mmm...boring [laugh]...when we...mm, wrote it, I feel that, if everyone just wrote it, it would be more like, mmm...the same; but if you made it, like, mm, just do it however you want it to, then somebody might do it, say PowerPoint thing, a poster, a brochure...I don't know...It will be different."

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Janet shared her thoughts on the role-switching practice and realized the objectives of the assignment from a teacher's perspective but also wanted to enjoy the assignment as a student.

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### **Construction of Selves in Their Blogs**

The third theme was the construction of selves in their blogs. Most participants had no blogging experiences. One of the three who said that she had previous blogging experience later explained in her interview that her experience was in using another blogging service, Tumblr, which was basically like what most college girls did with Pinterest: she used it to collect images and seldom posted texts. Therefore, keeping this blog was still a big challenge for her.

However, she said that she was willing to keep it as a personal portfolio or journal that could show her growth as a teacher. Due to their unfamiliarity with blogging, the participants demonstrated a lot of growth within the semester not merely in their blogging skills but also in their construction of selves. Two sub-themes that emerged from the data are presented here.

**Building a Professional Image.** Amy was the first one who surprised me with her construction of self in her blog at the end of the second month in class; February 27, 2014 was a date that I would not forget. Amy and Lori had been best friends since high school, so they always came to class and left together. However, on that day, Amy stayed at her seat until every single student had left the classroom, including Lori. Then she asked me whether I could do her a favor. I was not sure what she wanted, because she had not yet turned in two reflections and the draft for her 20% Design Project. I was actually ready for her to give an excuse for the late assignments or to ask for a longer extension without penalty. However, I still smiled and asked her how I could help her. Then she told me that she wanted to re-do her blog and would finish all the late assignments on the weekend. I was very surprised and wanted to check with her about what happened because this never happened before. Not a single student would tell me that they wanted to re-do the assignments after almost half of the semester before. Then she told

me that it was because she felt bad about herself. I definitely wanted her to explain that, so I inquired further. She started to tell me how embarrassed she had felt about herself after she viewed her partner's blog over the past two months. She said that her partner had built up a very professional image in all the postings. Compared with her partner, Amy felt so embarrassed that she was just writing nonsense and so just tried to finish the posts. She never really thought about building an image on her blog. However, she had a dream to win the Miss America crown and was highly involved in beauty pageants. She cared about what she did in her real life but did sloppy work for this blog. That was why she wanted to re-do the whole thing. I was surprised but pleased, and without hesitation, I agreed that she could re-do her blog.

The morning of March 4, I received an email from Amy in which she told me that she fixed her blog and finished all the assignments that were late. I checked her blog and found that she actually re-wrote almost every post before that day. She added more ideas and personal experiences to support her thoughts. All the images she used were of the same size and were aligned with texts. The titles of every post were also clearly stated with the topic instead of being just one keyword. After reading her new blog, I emailed Amy to ask her whether she would be willing to share her experience with the whole class. She agreed and did a good job talking about the motivation for her to re-do the blog with the whole class. She said that it was because of the differences in the self-images she saw on her partner's blog and her own that she decided to start over. Her talk started a ripple effect in my class.

After that day, several participants in my class started to give their posts creative titles instead of standard ones with the topics of the reading materials. A few of them also gave titles to their blogs instead of saying "Someone's Course Number Blog." Some participants started to

give captions for their images and made sure that their images were not of different sizes.

Reading their blogs started to be a pleasure after Amy shared her experience in class.

However, this was not where the ripple effect stopped. Two weeks before the end of the semester, the participants were reminded to check their blogs to make sure that they did not miss anything for the final evaluation. I also reminded them that this would be the last chance for them to make changes if they wanted to win the Best Overall prize for the semester. If they really wanted to impress their classmates and me, it would be good for them to see what their other classmates had done and how they had designed their blogs. This encouragement, and certainly the added enticement of the prize, pushed some of them who had never read their classmates' blogs to take a quick look at others' blogs. This was another ripple effect.

Julianne, a senior in communications, redesigned her blog after Amy shared in class. Her new blog was very organized with tags and categories labeled. She separated the reflections into three categories: the reading reflections, the project reflections, and the 20% Design Project documentary. Even though she had some missing reading reflections, she systematically presented other assignments and helped her readers to easily find what they wanted to read.

Apparently some participants went to read her blog after I encouraged them, because a few participants then created categories and tags for their blogs as well. Two of the participants, Jack and Patty, told me that they changed because they thought it looked really professional and organized. Since they were going to use this website as part of their portfolio for job applications soon, Jack and Patty decided to make it represent the professional image of them. Amy also saw Julianne's reorganization of the blog. However, she and Lori could not figure out how to do it. They came to me for help to reorganize their blog posts.

After Amy changed her blog for the first time, she started to show strong interests in helping others learn more about themselves. During the interview, she said that it was like her passion was reignited. She told me her passion had originated in middle school when girls were being mean about each other's appearance. During that period of time, she did not know how to appreciate herself but just needed to deal with the other girls' attitudes and words. Then she became involved in beauty pageants and learned how to see herself better as a person who had confidence and the ability to accomplish many things. As time went on, she became so busy presenting herself in a certain way that she forgot what she needed to be as a college student until she read her partner's blog posts. Therefore, she changed her Learning Adventure Project and the 20% Design Project to the topic of finding oneself. It turned out that some of the projects Amy did throughout the semester showed the New London Group's idea of design. The most important thing was that she put herself in the center of the design process.

### **Table 36**

#### ***Quotations from Amy's and Julianne's Interview on Building a Professional Image***

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“ We had, you know, we had partners, my partner, um, while I was looking at her blog, I realized that my blog was not like, something like, her...um...hers was just so well-constructed, and I looked back at mine, and I was like, ‘um... this is embarrassing, this doesn't represent who I am as a student’, so, um, I just wanted to, um, fix that, just a little bit, just for you, because I want you to know I am putting as much effort as I am in my biology class and other classes I'm taking. So I just thought it is important to, um, giving you my best work at all time, to present my best work overall, rather than, um, just half way. Her way of presenting herself was a lot different than mine. I was just all over the place, there was no clear flow in mine, but, with hers, it was just, she was just very confident, when she spoke, she was like, um, she had all these different points that she wanted to make. And I was not like that, so I wanted to fix that, and to change a little bit, to make mine more, to come across more confidence. She was building a very professional image and I was NOT [emphasized]. I was immature, and I want to be like that. As a student, I was so immature.”

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“Um...I changed it because I wanted to be considered as a professional person. I am always a professional. You see my pictures on my about me page...that's me. I always give people that impression...and you know I am a communications major and I am graduating this semester...so I thought about including this blog in my portfolio for job interview, and I definitely don't want a horrible one [laugh]. When you asked Amy to talk about her changes, I thought it was just her pageant stuff...but then I thought it was kind of neat... That motivated me to make some

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changes, so I can be a professional even on the blog. So I did it.”

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**Showing Their True Selves in Their Blogs.** The second sub-theme about the participants’ construction of selves in their blogs was revealing their true selves in the writing. In the very beginning of the semester, it was easy to tell that none of the 33 participants were familiar with writing blog posts. Several of them posted their reflections in the format of an academic paper to their instructors. The words they used were formal, their reflections were more like summaries of the reading materials, and there was nothing that their readers could relate to. After I shared some tips on writing blog posts, all of them ceased to use that format and started to make their writing look more like personal blogs instead of papers submitted online in a standard academic format. However, the content was still mostly the same, and as a reader, it remained hard to relate to the writer.

What really changed their writing were the dialogues they had with both their classmates and their virtual partner. When they commented on their partner’s posts, they did not use an academic tone. One participant said that writing the comments really changed her tone of language and she started to write in a more colloquial way to interact with her partner. Chuck also said that he changed his writing style into a more natural dialogue style after he knew Roxanne was reading his posts about the 20% Design project.

When the 13 participants were asked their feelings about trying to use different modes to present their thoughts in the blogs during the interviews, they all said that it was very challenging, as discussed in the previous section about their skills. However, they also stated that they actually liked it more than they thought. Originally, they thought keeping a blog would be a boring and tedious practice, especially the reading reflection posts. However, the reading

materials were mostly true stories about how others use technology to help them learn. One participant, Roxanne, said that that made the blog practice a fun activity.

When they were asked about whom they were writing for in the blog practice in the interviews, all 13 participants answered that the instructors and their partner were the only two audiences in their mind when they began. However, most of the 13 participants acknowledged that this changed over time. Even though there was not much interaction between their partners and them, they were still aware of their partners' attention. Due to the attention they received from their partners and even people around the world that they did not know, all 13 participants said that they changed from a formal writing style to a more personal, casual writing style as time went by.

Joanna and Lindsey were the only pair that I interviewed from both classes. Both of them said that this kind of blog practice was very personal for them. Both of them said that they did not think of writing the posts as writing assignments while having a partner like they had. The blog practice was more like sharing what they truly think with a friend. Janet shared the same idea that she consistently put herself in the posts. It was completely different from writing a discussion post in eLC, because she would not put herself into that kind of post since it was more like a paper. Keira said that her partner did not comment on every post, but he was critical when he commented. That changed the way she wrote and the way she thought and forced her to put herself in the posts.

Some of the participants also said that it was fun because they were virtually talking with their partner and an even bigger group of strangers. All 13 participants who were interviewed expressed their increased interest in reading and commenting on strangers' blogs in the future just as they did in this study. Gina said that she was not expecting anyone except for Maggie and

her partner to read her blog when she started. However, after the first three posts, she noticed that the record showed more than 60 views on her blog and she was extremely surprised and concerned. She could not figure out who was reading her blog. Then she guessed that it might be people who were interested in education as well. Therefore, Gina started to put more thought into her blog posts and to think of herself as a future science and math teacher while at the same time as a pre-service teacher in college.

When the participants were asked whether they preferred pairing up with someone they knew or someone they did not know as they did in this study, all 13 participants said that they preferred having a virtual partner like this. Without knowing who this person was in real life or having the chance to meet each other, the participants felt that they could do more free writing and genuinely share their perceptions and ideas.

### **Table 37**

#### ***The Participants' Quotes about the Construction of Selves in Blog Posts***

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Roxanne talked about her feelings about keeping a blog. She said, "I thought it would be boring [laugh]...because Wordpress is not as fun as Tumblr. But you actually gave us a lot of freedom in designing the blog and writing the posts...and also there are a lot of meaningful topics that we can talk about, so I like it." Later that semester, Roxanne had an interesting experience in her blog and Twitter practice in this class. A week after the commercial project was done, Roxanne came to me and told me that the CEO of the Web 2.0 tool she introduced in her commercial tweeted her and complimented her commercial. She was excited and surprised. During the interview, she described how that changed her writing in the blog.

"I thought it would be only you and maybe some classmates...I wasn't expecting a large audience. I wrote in a slightly, um, like, entertaining way, until I saw that tweet from the CEO of Scoot and Doodle. I guessed she read my blog first and then found other things I did and my Twitter account, because the commercial was posted on my blog. That made me aware of, um, like, oh, more people are seeing it, so that changed my mind. I guess, um, I am kind of proud of myself [laugh], so I changed the tone of my writing a little bit...still entertaining, but more about me...as a student, and as a history teacher who is good at technology, I think."

I also asked her to talk about the reason why she read other classmates' blogs when it was not required. She said that it was just for fun the first time when she did it: she was curious about what others were writing about. It was not until when everyone was invited to give a five-sentence summary about their 20% Design Project in class that she started to read Chuck's blog on a regular basis. She never commented on Chuck's blog posts, even though she said she could feel like Chuck was talking to her, or someone like her. She noticed that Chuck put more

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questions in his posts for his readers to ponder. Chuck's posts really helped her to see how she could design her project.

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After knowing that she had some unexpected audiences, Gina said that "I want to be more detailed and make a lot of sense to my audience. But it takes a lot of time for me to figure out what I should write for them...so, I just want, um...want to write something about me. I want it to be able, I want my audience be able to understand that it's from me, not like that I copied and pasted on something I got from someone else. So I started to write in a more personal way."

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Keira's opinion about how having a partner changed her way of thinking and her way of writing—"It helped me to make sure that I put meaning into my post rather than, just like, like thinking a post or whatever, and I didn't want to sound like stupid in my posts, because someone was gonna read it critically."

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Marley shared similar ideas about how her partner changed the way she thought and wrote. "In the very beginning, I think it was more for the teacher, because I was thinking just to get everything right, and to get good grades, and then I kind of, um, I guess that just changed. I got more personal, for me, I kind of like, when I was really feeling and thinking, I feel like I know my partner was going to look at it, I started to think how she is gonna look at it, think about it, you know, like, what is her opinion? And how is she going to think about me...so I started to put more personal experiences in my posts."

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### **Expectations on Peers**

The last theme that emerged from the data came from a few participants' interviews. Several participants were not education majors. They honestly talked about their resistance and negative feelings about reading the materials and doing projects in the very beginning. However, the flexibility and freedom that they had for the projects really helped them to design activities and materials in their major fields. In addition, the interactivity with their peers and instructors was of great help. Being able to see how their peers, especially the education majors, did the projects and reflected on the reading materials and then discussing the projects as a class helped the non-education majors accomplish their projects. One of the participants said that it was like taking baby steps as they imitated their education major peers. Chuck said that both his parents were teachers, but he never wanted to be a teacher. However, doing so many projects and learning how other educators engaged with emerging technologies helped him develop a new perspective on learning and teaching. In the interview, Chuck said that though he still may not want to be a teacher, he was glad to see that his classmates were so creative and passionate about

teaching future students with all the cool technologies that they learned in this class. Julianne and Kate expressed the same idea that they were so happy to see their education major peers being so creative in designing fun learning materials to help people learn instead of merely giving them tests. Kate said that she learned so much by working with Roxanne and noted that she could see Roxanne being a cool history teacher who could help her students to develop strong critical thinking skills.

### **Summary of the Participants' Experiences in the Technology-Enhanced, Multimodal, Dialogical Learning Environment**

The participants in this study showed some changes in their awareness and attitudes relating to their digital literacy practices and improvements in their skills in creating multimodal compositions to represent themselves. While they were in this technology-enhanced, multimodal, dialogical learning environment, they also positioned themselves differently. As a researcher, I was really curious about whether they felt the differences in this learning environment and how this environment had influenced them.

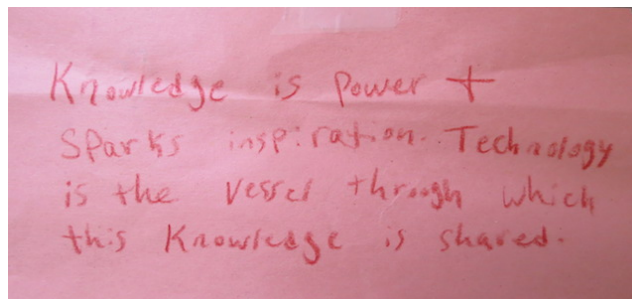
During the photo-elicitation interviews, the 13 participants were asked to either make another artifact or to bring some images to demonstrate their perceptions of this learning environment and how they saw their digital literacy practices. I did not use the term “digital literacy practices” with them when I told them to prepare an image for the interview. I basically told them to think about what we did in class. Some of them brought images and some of them brought an object. Some of them forgot to bring images, so they created an artifact during the interview. This time, they were not confused and did not hesitate to make one just as when they have been asked to create one at the beginning of the semester. In addition, they demonstrated their creativity in visualizing their perceptions and ideas this time. Therefore, I am excited to use what they presented and shared with me to conclude the data presentation.

**Table 38**

*The Participants' Final Artifacts about Their Experiences in this Study*



Coco brought this artifact that she created at home to show how she saw her digital literacy practices right now. She thought that technology was like a virus in the 21<sup>st</sup> century. Coco majored in biological sciences, so she made a virus strain on a DNA to show her perceptions about what we did in class. She said, “technology is like a virus that just spreading like crazy, like taking over like our culture, our environment, and learning, um...the learning system.” When I asked her whether that virus representation had a negative connotation, she said it totally depended on the situation. This was different from what she said in the very beginning of the semester, especially regarding her attitude toward Google. She said, “after this semester, I realized that technology is not like an elixir. It actually can be harmful in some ways. We just need to learn how to use it wisely. Say, um, like Google, I thought we learn everything from Google, but apparently not...we learn a lot from people around us...I actually learned a lot from Keira this semester. So I guess...if you think about this [how much we relied on Google], then technology is really like a bad virus.” Coco’s attitude changed a lot because of the interaction between herself and her partners in this learning environment.



Marley brought her drawing of a vase for the interview. On the back, she wrote “Knowledge is power and sparks inspiration...Technology is the vessel through which this knowledge is shared.” Marley said that it showed how she felt about her experiences that semester. She said in the interview that “everything we did in this class are like, uh, projects and hands-on and actual learning instead of someone, uh, just giving us information. I remember that we did ARIS [Augmented Reality Interactive Storytelling, an augmented reality game we played in class],

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scavenger hunt on our smartphones...I've never done these before in other classes. It's different. I like it, I feel like if I was learning, truly learning something that will last, like technology, I think it is good." Later in the interview when we talked about the group projects, and she referred to this image again. "I think, like what I said in the picture, the inspiration, the knowledge, are shared...like, I read Keira's blog posts, and her 20% Design Project for the speech pathologist, that helps me a lot. She definitely knows much more about speech pathology than me...so seeing her projects and reflections, I think I see a lot of opportunities and tools that I can use in the future." Marley's experiences in this learning environment helped her see herself as a person who could share and inspire someone just like she was inspired in this class.

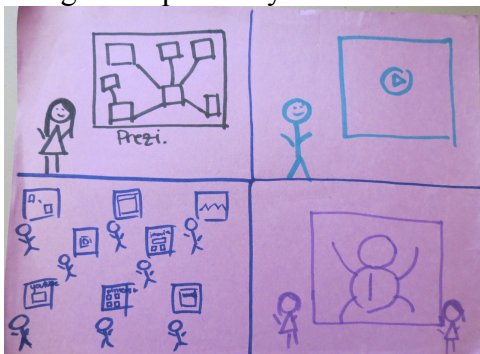
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Amy brought an orange with her to the interview. She kept playing with it like a ball before we started. I had no idea why she brought an orange with her until I asked her to share her image with me. Then she put the orange on the table and told me that is it. I was laughing and speechless, so I asked her to explain it to me. She started to tell me her rationale.

"Um...was the question what did I learn in this class? Or what was this class to me?"

Um...well...because this class, like...challenges you to be creative, and...to think outside of the box, I started thinking what something I could use that you would exactly use to explain this class to us. And...so I decided to use an orange, [emphasized]. Um, I use an orange because, um, of its color, of its shape, and um, eventually how it can be divided. So say, when I think about this class, um, it's like an orange because an orange is a vibrant bright color, and this class was a lot of fun...and very enjoyable for me. So, um, the bright color of it means being happy and so many different things that we got to do. And, um... an orange is round, just like this class is well-rounded, and it covered a multiple, um, a multitude of different things, and topics, and subjects, and then, it can be divided evenly among people, so I thought about like everyone in our class can bring an orange and divided into certain amount of pieces and then everybody can get different pieces, so everyone can see something differently...so that's why I brought an orange to explain to you what this class was to me [laugh]."



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She also drew a picture to show how she saw this class. Amy was aware of the diversity of the projects, the assignments, and all the different modes I used in class. She said that the way I taught in class kept her very motivated and wanting to do her best. “I know you work hard for us, so I want to give you that same work ethic back” was what she told me in the interview about all my modeling in class. She never thought about these many ways that she could use for her personal life and her study. She said she even could use this for her pageant business and it would bring her to a more advanced level. Amy said that this learning environment was a very meaningful environment to her.

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Chuck used a multi-function tool to represent his idea about this class. He said that everyone knew of the existence of a multi-function tool, just like everyone knew about all the technologies. However, not everyone used its full potential. He said he did not know the functions of all the tools in a multi-function tool. So this class was like an introduction to a multi-function tool. It helped him learn how to use a multi-function tool: technologies. In addition, he also talked about the limitations of a multi-function tool. He was thinking about bringing a more complicated one. However, he laughed and said that he probably would be arrested if he brought that one on campus because of the knife and other dangerous tools it includes. That conundrum mirrored the way that some schools set up rules and regulations for using technologies, especially social media. Chuck said that he understood that some social media could be distractions, but noted that it would also be of great help if teachers knew how to use them effectively. He said he was glad that he took this class before he graduated and learned so many different skills and so much new knowledge to help himself for his future career.

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Roxanne brought an interesting image to me. It was a piece of paper where she had written several words in different fonts. She said that those words represented what she had experienced and learned in this class. The words she wrote were: exploration, content, improvement, communication, flexibility, creativity, inspiration, collaboration, novelty, application, visual, and innovation. All the projects and the reading materials helped her grow. She said that she never liked group work or projects and was mostly like a *control freak*, but she came out of her comfort zone and explored the possibilities with her teammates in this class, and she realized that

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sometimes teamwork was not so bad. The following were her words about her feelings regarding this class.

“I think, um, I am more thoughtful of, like, how I am presenting the work, instead of just, um, because all the other courses, I am sorry, they are just like, content knowledge, like, integrating that knowledge into a paper or something, but in this class, it’s more like, um, OK, how are you going to use your final product, and how is that like really in a different aspect, creative, which is not something that’s really asked much in other classes, to think differently, to see things presented differently, it’s more like integrating the knowledge you already have, the creative aspect in this class. I can see myself really using it in my other classes. I want to be creative.” Roxanne did see all these different modes and was inspired by the different things she saw and did. She also mentioned that it showed the possibility of everything. She was still proud of herself and excited about the conversation that she had with the CEO of Scoot and Doodle. She said that it had really opened the door for her to see how a different learning environment could create different possibilities.

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Julianne forgot to bring a picture, so she made an artifact to show her perceptions.



She said that the colorful pom-poms in the center showed all the diversity that we had in this class and the circle and stems showed how everything was connected. She enjoyed all the design projects and reading materials in this class, because she felt that they were talking to each other and talking to her too. She pointed out that her experiences in this class made her be aware of greater possibilities in trying new things or in presenting her ideas in different and complicated ways. This technology-enhanced, multimodal, dialogical learning environment really was a very different learning environment for Julianne and it helped her change and develop a different attitude and new skills about using technology in her learning but also in her job preparation. The following were her words about her experiences in this learning environment.

Julianne’s quote for the last artifact

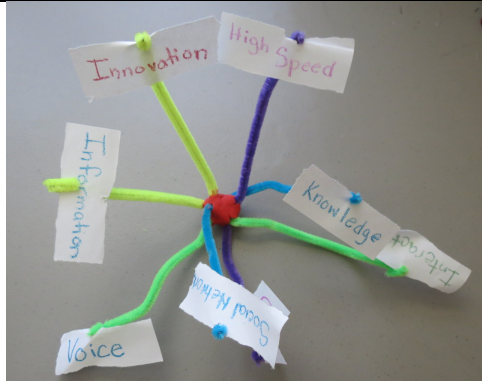
“I definitely learned a lot of the technology, like iMovies, iPhoto...learning about, um, using the tools. But it was more about that. There are way more possibilities that I can work with, especially when I have all these technological options. For example, say finding images, before I would just find a simple image, but now, I will find more complicated ones, like word cloud, or other stuff to express my ideas and that is just something I’ve never considered before. And it was because of you. Your using of all different kinds of things was the main reason that I started thinking outside the box, because whatever you gave us, like, um...any project you gave us, there would be at least ten different options on how to go about it, so you showed us, word clouds, wordpress sites, and google sites, it’s just like everything, so I definitely benefit from that, because I start thinking in the way I have not been thinking so far. So when I think about a project, I will not just think about a word document, I will think about a poster, I envision all

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these possibilities. I am also aware that...um, if I want to build something, and there is no, there is no product or application that I know of, then I can probably find one...another thing was that all the things you gave us were really fun and engaging. That was why students would want to come to class. Because we don't want to come to a class where we just listen to someone who reads to us."

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Keira made a 3-D model to show how she saw her digital literacy practices in this study. "It looked complicated, but it is actually a very simple idea [laugh]. Ok, so, everything starts from the center, which could be me, or anyone, or a group of people. Each stem is a technology tool and they all serve with different purposes. However, all these technology tools connect with people...after all, it is me using them to help me learn something or say something to others. Remember...we learn with technology, not from technology. So all these technology will help us learn new things, interact with others, and be creative! Just like what we did in this class. So many different things and so many different ways to do with technology. And one thing I learned is that all these are constantly changing...so just like what I did for my 20% Design Project, I need to keep updated all the time. Because I want to be the best help of my students." The eight labels she had on her model were, innovation, high speed, knowledge, information, interact, social media, voice and constant changing. It really neatly summarized what we have done this semester.

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In conclusion, the main themes for these data were the keywords in the research questions. However, many sub-themes emerged from the data in different modes. These sub-themes will be further analyzed in chapter five in response to the New London Group's idea of design and compared with the literature.