2015

Technology and Social Media in Motivating At-Risk High School Students to Complete High School

Rebecca Mix Yard
Walden University

Walden University

College of Education

This is to certify that the doctoral dissertation by

Rebecca Yard

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. MaryFriend Carter, Committee Chairperson, Education Faculty
Dr. Cheri Toledo, Committee Member, Education Faculty
Dr. Paula Dawidowicz, University Reviewer, Education Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2015

Abstract

Technology and Social Media in Motivating At-Risk High School Students to Complete High School

by

Rebecca Mix Yard

MA, University of the Incarnate Word, 1999

BA, William Woods College, 1972

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Educational Technology

Walden University

November 2015

Abstract

Overall, 11% of high school students leave school without a diploma, and the percentage is higher for at-risk populations. High school graduates earn higher salaries and are healthier and more law abiding than dropouts. Research is limited on the motivation of at-risk students to graduate from high school related to their *technological identity* to include technology and social media in their learning schema. This qualitative case study explored at-risk students' perceptions of social media, personal learning networks, and informal learning in facilitating their graduation. Pink's concept of motivation, Siemens's connectivism theory, and Bingham and Conner's theory of engagement and social learning provided the conceptual framework. Interviews were conducted with 11 at-risk students identified by one Charter school: 4 students at-risk of dropping out, 3 dropouts planning to return, and 4 dropouts who had returned to high school. Open coding was used to identify rich themes and patterns that may help at-risk students succeed in school. Of the 5 themes identified 4 related to technology identity: transference to learning, relationships with personal learning communities and social networks, bridging technologies, and connected knowledge. Relationships with instructors and the school community also emerged as a theme. Connecting familiar and accessible technologies with formal learning could provide additional means of supporting academic success. Permitting the use of smart phones and social media to provide technological access to learning materials and instructors may create a motivating learning environment where students are willing to remain in high school to obtain a degree. Potential social and work benefits beyond high school may accrue for students.

Technology and Social Media in Motivating At-Risk High School Students to Complete High School

by

Rebecca Mix Yard

MA, University of the Incarnate Word, 1999

BA, William Woods College, 1972

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Educational Technology

Walden University

November 2015

Dedication

This work is dedicated to CDR Arthur Erick Mix, USN, Ret., who taught me the love of computers, learning, and teaching. His early work in technology was inspirational. His lessons in life, while learned with difficulty, will always be remembered. Fair winds and following seas, Dad.

It would be impossible not to include my mom, Betty Dorcas Johnson Mix, in this dedication. Her tireless support of our family in the face of seemingly insurmountable circumstances is truly admired. I love you and miss you, Mom.

Finally, huge hugs and kisses to my husband, COL Robert Allen Yard, DDS, FACP, USA, Ret. Without his encouragement and financial support, this work would never have been completed. Now I can keep the license plate, sweetie!

Acknowledgments

Each night, I say prayers to guard and bless all the important people in my life. This list includes my husband, COL Robert A. Yard, USA, Ret.; my children and daughter-in-law, Jennifer Chris Yard, Ryan Alexander Yard, and Misty Autumn Stafford; my grandsons, Joaquin Gabriel Yard and Mateo Ryan Yard; my sisters, Kathy Prevost, Tina Williams, and Barbara Mix; my sister separated at birth and dearest friend in life, Alyce Robbins; my life mentor, Mary Ellen Rhatigan; my dear friends Ken Knapp and Caroline Caffey Haberer Knapp; my trusted friends Dr. Derek Osborne and his accomplished wife Martha Lynn Osborne (Miss Lynnie); my Walden University mentor, Dr. MaryFriend Shepard; and all my classmates in this journey. These prayers also include their families and anyone else I think might need a prayer. Sometimes they even include me. I know they also pray fervently for me to complete this degree successfully. My life has been blessed by them in so many ways.

In addition, I have four very special guardian angels who have watched over me daily to remind me to keep moving forward and honor their past encouragement. Thank you so much to my aunt, Jane Schmitter Key and her husband, Dr. Ted W. Key; good friend Diana Knapp; and my mom, Betty Dorcas Johnson Mix. I miss you all every day.

Thank you so much to my committee. I am so glad you hung in there with me even when you were not sure I would ever finish.

My deepest thanks to the young people who agreed to be interviewed for this study. Their words will resonate with many other students and help them make choices about their futures. Thank you also to the dedicated staff of their public charter school

who have chosen to devote their lives to the futures of these young men and women. They are touching the future.

In a letter to his wife dated May 12, 1780, John Adams, the second president of the United States of America and former educator, wrote, “I must study politics and war that my sons may have liberty to study mathematics and philosophy. My sons ought to study mathematics and philosophy, geography, natural history, naval architecture, navigation, commerce and agriculture in order to give their children a right to study painting, poetry, music, architecture, statuary, tapestry, and porcelain” (Hogan & Taylor, 2010). This quote should cause every educator to remember our mission to prepare all of our students to be the citizens of the future.

Table of Contents

Chapter 1: Introduction to the Study

The high school dropout rate in American schools has reached unacceptable proportions, particularly for students of certain ethnicities and genders. Statistics provided by the National Center for Education Statistics (NCES) revealed that for the 2011 to 2012 school year, 3.3% of high school students left school before receiving a diploma. This type of student is called an *event dropout* (NCES, 2014, p. 15). A second category of dropout, referred to as the *status dropout*, includes students between the ages of 16 and 24 who are not currently enrolled in school and did not complete high school. The total for this group, according to the same data source for the same period, was 7.7%. In 2014, of a population of high school seniors totaling just over 3 million, 11% or 330,000 of potential graduates did not leave school with a diploma.

Additional problem areas are revealed when the population is broken down into grade level, ethnicity, and gender groups. Subpopulations with dropout rates as high as 22.5% exist. Further, according to U.S. Department of Education Common Core of Data (CCD, 2011) statistics, 81% of the ninth grade population graduated. Disparity also exists in the way states report their dropout information, creating a complicated and unreliable picture of national graduation and dropout rates. Bowers and Sprott (2012) found dropout rates ranging from about 20% to over 50% for urban high schools with large student populations. The dropout rates for some subpopulations are even higher (p. 176).

Schoeneberger (2012) provided a view of the statistics from an economic perspective.

> Not only does the decision to drop out of school affect the individual student, but the rest of America also suffers. Martin and Halpern (2006) estimate the lost lifetime revenue for male dropouts between the ages of 25 and 34 is approximately $944 billion dollars, and costs associated with poor health and criminal activity have been estimated at $24 billion. The limited education and skills dropouts possess result in the acquisition of lower-paying jobs and a reduced contribution to the U.S. tax base, with estimates suggesting tax contributions at approximately half the rate of a high school graduate, equating to about $60,000 less over their lifetime. (pp. 7-8)

The globalization of the economy with the resulting movement of lower skill level jobs to other countries increases the demands for young people to become better prepared to compete on the world employment stage.

A task force organized by the Council on Foreign Relations (CFR) led by former Secretary of State Condoleezza Rice and former Chancellor of New York Public Schools Joel Klein found that 75% of young men and women eligible to serve in the U.S. military would not qualify on the basis of fitness, criminal history, or lack of education (*United States Education Reform and National Security*, 2012). Many do not possess the required high school diploma or graduate equivalence diploma (GED). Thirty percent of those who do have a diploma or GED cannot pass the required aptitude test due to low math, science, or English scores. The task force made the point that the United States cannot dominate the world with military force alone, asserting that dominant power would come from "human capital." If the educational system does not produce well-educated human

capital, national security will be at risk as more individuals from foreign countries are employed to fill positions within the U.S. State Department and intelligence agencies. These positions include foreign language translators, scientists, defense workers, and aerospace technicians. The task force also found that failing to complete high school led to a higher possibility of unemployment, a life of poverty, or time spent in jail. Male high school dropouts have a 1 in 10 chance of being sent to jail or a juvenile detention facility. Salaries for all populations of dropouts are considerably lower by as much as $20,000 a year (p. 23).

Gifford, Evans, Berlin, & Bai (2011) found that high school graduation was the number one indicator for success as an adult, and that high school graduates earned higher salaries, were better citizens, and stayed healthier. High school graduates were also more law abiding when compared to dropouts. Their research also demonstrated a gap between ethnic groups in graduation rates. Of the total high school population, 24.5% failed to graduate. African American and Hispanic students had rates of 36.7% and 34.8%, respectively, failing to graduate. Caucasian and Asian students had 18.4% and 7.5% failing to graduate (p. 4). The discrepancy exhibited by these percentages shows the need for interventions to narrow the gap.

This chapter includes a discussion of the major sections of the case study. The background and problem statement sections introduce the educational challenges faced by students who are at risk for dropping out of high school. The purpose of the study, nature of the study, and research questions served to determine the focus for the data collection and participant interviews. The conceptual framework was based on Pink's

(2009) concept of motivation, Siemens's (2006) theory of connectivism, and Bingham and Conner's (2010) theory of engagement and social learning. These theories guided the definition of terms, assumptions, scope, limitations, and delimitations. The significance of the study and implications establish the potential impact of the research on the population of students in question.

Background for the Study

Ninety-four percent of teenagers are connected to the Internet, but a digital divide continues to exist where users are limited by strength of signal, lack of resources, or no access at all (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013, p. 2). Individuals affected by the digital divide lack opportunities to develop skill sets, create relationships, acquire information, and establish personal learning communities (Ahn, 2011). Research into the effects of the digital divide is well established; what is not understood is if and how at-risk students operate within the connected world and, if they do, how those connections affect their educational experiences.

The creation of a technology identity reflects individuals' perspective on their technology skills, their access or lack of access to technology, their view of the significance of technology in their lives, and their desire to place technology into their learning schema. These elements are blended into the individual's personal belief system (Goode, 2010, p. 498). While research into technology identity has been conducted, none has included at-risk high school students who have dropped out of high school and are thinking of returning, at-risk high school students who have dropped out and returned to high school, or at-risk high school students who are thinking of dropping out of high

school. The development of a technology identity using personal learning networks and social media and its role in keeping the three at-risk populations in school have not been explored.

Three types of learning—formal, nonformal, and informal—are well documented in the literature, along with their applied factors: the extent of organization, certifications, who causes the learning to take place, and "the learning trigger," particularly as they apply to online communities (Jahnke, 2012a, p. 61). The connection between informal learning outside the school setting and formal learning within the educational setting has been explored in the literature to some extent; however, a strong connection to the three populations in this study has not been established.

A *personal learning network* (PLN) consists of groups of people and resources with which an individual connects for learning that is typically informal in nature. The ultimate goal of a PLN is enhancing the educational experience for all parties within the network (Tobin, 1998). A PLN is viewed as a living entity with a structured organization, information system, and culture able to provide learning that ranges from shared experiences to advanced decision making and competition (Senge & Kim, 2013, p. 13). Reflection, openness, analysis, and improved mental models, or what Kyza (2013) called *process sharing*, *thinking*, and *co-creating*, are the foundation for a learning organization (p. 121). To be effective as a member of a PLN an individual must participate in substantive discourse, creating a social identity. Technology identity is a subset of social identity. The individual must discover and create connections with other people who are seeking answers to similar questions. Connections must be activated and maintained to

continue the learning process (Rajagopal et al., 2012). When students were moved from a culture of getting and giving information to one of participation, the result was an easily accessed, integrated, and sustained approach to learning (Laat & Schreurs, 2013, p. 1433). Research into personal learning networks for a wide variety of groups has been extensive, but not in the area of the three populations addressed in this study.

Social media have been described as conduits for "communication, collaboration, and creative expression" (Dabbagh & Kitsantas, 2012, p. 1). Social media include social bookmarking, blogging, collaborative workspaces, media sharing, social networking sites, and web-based office tools. The creation of a technology identity that would allow at-risk students to create connections beyond their family and face-to-face relationships might lead to a broader social context for their educational efforts (Jahnke, 2012a, p. 61). Research indicated that the creation of an appropriate technology identity within an integrated format of social media and face-to-face interactions creates a stronger connection to teachers and educational professionals, higher satisfaction with the learning process, increased motivation, and a stronger sense of identity outside the virtual world (Bingham & Conner, 2010, p. 6). The populations addressed in this study were not included in the reviewed studies, nor was there any previous work concerning how high school students could be kept in school using social media.

With an understanding of technology identities, use of social media, personal learning networks, and perceptions of informal learning for the three groups of students in this study, it may be possible to provide alternative technological interventions that keep these students moving successfully toward the completion of a high school diploma.

Determining how students function within the connected world provides a level of awareness about how to connect the informal learning of the day-to-day world with formal learning in an educational setting through social media and personal learning networks.

Problem Statement

Schoeneberger (2012) noted the many problems associated with a failure to graduate from high school for both individuals and for society. Lemon and Watson (2011) pointed to a structural problem with the current high school curriculum and instructional methods. The relationship between high school graduation rates and students' motivation to complete their degree requirements is unclear (Bowers & Sprott, 2012; Lemon & Watson, 2011; Schoeneberger, 2012). It is unclear what role technology identity, social media, personal learning networks, and informal learning play in keeping students in school (Dabbagh & Kitsantas, 2012; Maranto & Barton, 2010; Senge & Kim, 2013; Yu, Tian, Vogel, & Kwok, 2010). The role that a strong technology identity, use of social media and personal learning networks, and implementation of informal learning play in motivating students to complete their high school degree is not well known.

This study helps to fill the gap in the literature pertaining to at-risk high school students' perceptions about technology, their identity within the technological world, their use of social media to make connections to their peers within personal learning networks, and the connection of these elements to informal learning. Findings from this study can be used by teachers, counselors, and administrators to assist in their efforts to improve high school graduation rates. No Child Left Behind (NCLB) has provided the

financial means for students at all levels to receive additional assistance through a wide variety of interventions. The role technology might play in these interventions for the three populations of at-risk high school students in this study has not been reported. By documenting perceptions toward and influences of a connected world for at-risk high school students, this case study may inform educational professionals about the most effective methods of using social media, personal learning networks, and informal learning to motivate and support students as they complete their diploma requirements.

Purpose of the Study

The purpose of this single case study was to assess student perceptions of the role technology identity, social media, personal learning networks, and informal learning play in facilitating the graduation of at-risk high school students. Three groups were analyzed: at-risk high school students who were considering dropping out, at-risk high school students who had dropped out but returned, and at-risk high school students who had dropped out and were considering returning to school.

Research Questions

Research Question 1: How does the development of a technology identity using social media and personal learning networks influence at-risk high school students to complete diploma requirements?

RQ1a: How does the development of a technology identity using social media and personal learning networks influence at-risk high school students who are considering dropping out of school and not completing their diploma requirements?

RQ1b: How does the development of a technology identity using social media and personal learning networks influence at-risk students who have dropped out of school but are considering returning to the classroom to complete their high school diploma requirements?

RQ1c: How does the development of a technology identity using social media and personal learning networks influence at-risk students who have dropped out of school but have returned to complete their high school diploma requirements?

Research Question 2: What are the perceptions of at-risk high school students regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2a: What are the perceptions of at-risk high school students who are considering dropping out of school and not completing their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2b: What are the perceptions of at-risk high school dropouts who are considering returning to the classroom to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2c: What are the perceptions of at-risk high school students who have returned to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

Conceptual Framework

The conceptual foundation for this study was based on the work of Pink (2009), Siemens (2006), and Bingham and Conner (2010). Their concepts and theories provided a framework for analyzing the most prevalent reasons students fail to complete their high school education and the role technology plays in keeping students in school. A complete analysis of the work of each of these theorists and the research supporting the theories can be found in Chapter 2 of this study.

Pink's (2009) concept of motivation suggested that the movement from routine work to creative, interesting, and self-directed work requires an alteration in educational strategies. This concept may be used to understand student motivations toward learning, particularly in relation to informal learning strategies. An indicator for success is when students understand how motivation influences their perceptions of the effort needed to succeed in both formal and informal educational opportunities (Duckworth, 2013, p. 2). Employing social media and personal learning networks increased both motivation and educational success (Gobble, 2012; Maccoby, 2010; Nordgren, 2013; Parker, 2012).

Siemens's (2006) connectivism theory incorporating knowledge using anchoring, connecting, filtering, and social spaces provides a framework for comprehending personal learning networks and social connectivity. The use of the World Wide Web allows users to make learning and social contributions, creating new knowledge and connections (p. 114). Supporting the use of social networks for both formal and informal learning opportunities was a practical solution to strengthen the motivation to remain in school (Couros, 2010; Martinez, 2012; Ravenscroft, 2011).

Bingham and Conner's (2010) theory for engagement and social learning provides context for how learning takes place within social media. They believed social media allow for more personal connections, and learning is accelerated when partnered with powerful technology customized for each user. Development of a technology identity and perspectives about educational opportunities was influenced by the use of social networking and the formation of personal learning networks (Allen, Naughton, & Ellis, 2011; King, 2011; Mancuso, Chlup, & McWhorter, 2010).

Nature of the Study

This qualitative single case study documents the perceptions of and influences on three unique populations of students who are at risk of dropping out, have dropped out and left high school, or have dropped out and returned to high school. Case study research is an empirical inquiry approach "that investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used" (Yin, 2009, p. 23). Yin cited a "distinctive need" for case study research that "arises out of the desire to understand complex social phenomena" (p. 14). This study was a single case with three points of data collection to triangulate the data and provide greater accuracy. I assembled and analyzed a variety of data through the interview process; however, a single case, at-risk high school students, was questioned in depth to provide credibility, transferability, dependability, and confirmability for the study.

Two other research approaches were considered, phenomenology and multiple case study. Both were deemed inappropriate. While researchers using phenomenology

employ an interview process and concentrate on the experiences of interviewees, a phenomenological study relies on a single phenomenon (Husserl, 1962, p. 48; Yin, 2011, p. 14). The research outlined in this dissertation used multiple individuals from three distinct groups rather than a single phenomenon. Phenomenology was not an appropriate research tradition for this study. The multiple case study research tradition relies on literal or theoretical replication of results using several cases (Yin, 2009, p. 54). The research conducted for this study had three distinct groups: high school students thinking of dropping out, high school students who had dropped out but returned, and high school students who had dropped out but were thinking of returning. Each group represented a data point. The three data points provided triangulation for a single case, at-risk high school students. Multiple case study was not an appropriate research tradition for this study.

The perceptions of three groups of at-risk students were examined in terms of social media, personal learning networks, technology identity, informal learning, and social learning. Four students who were failing, three students who had failed and left high school, and four students who had failed but returned to the educational setting completed an interview of about 1 hour. Follow-up communication was established to provide for member checking and additional questions if needed. All interviews were digitally recorded and transcribed by me. Dragon Naturally Speaking was used to convert the digital recordings into editable documents. HyperRESEARCH, qualitative coding software, was used to identify patterns and themes.

Definitions

At-risk: An *at-risk student* is a student who has a high expectation for failure at school. At-risk criteria also include failure to acquire basic skills in critical subject areas prior to leaving school. *School failure* is dropping out of school prior to completing diploma requirements leading to graduation from high school (NCES, 1992, p. 2).

Connectivism: Connectivism is a theory of learning that focuses on the "social and cultural context" (Siemens, 2005, p. 29) Connectivism involves knowledge created through a "network-forming process" (p. 29). This theory illustrates how learning occurs in the digital age.

Digital divide: In the United States, the term *digital divide* refers to inequality of access to technology that provides information or communication capabilities. Individuals, families, and organizations may actually experience such inequality or perceive the existence of such inequality. *Digital divide* also refers to a gap in access to the knowledge and skill required to apply information appropriately that is gathered through digital connections (Chinn & Fairlie, 2004, p. 1).

Dropout: The event dropout rate is "the proportion of students who were enrolled at some time during the school year and were expected to be enrolled in grades 9-12 in the following school year but were not enrolled by October 1." The status dropout rate is "the percentage of a population that did not complete high school" (National Center for Educational Statistics, 2014, p. 2).

Formal learning: "Situations in which some agent, a teacher, an educational software program, or a learning management system is directing the student's learning" (Greenhow & Robelia, 2009a, p. 122).

Informal learning: Learning that "is spontaneous, experiential, and unplanned" (Greenhow & Robelia, 2009a, p. 122).

Ning: A free online platform where users can construct a website for social interaction customized to the creator's specific needs (Arnold & Paulus, 2010, p. 188).

Personal learning network: A personal learning network is an informal learning network that consists of the people and other resources "a group of people who can guide your learning, point you to learning opportunities, answer your questions, and give you the benefit of their own knowledge and experience" (Tobin, 1998, para. 1).

Social learning: "Social learning is a cognitive process that takes place in a social context and can occur purely through observation or direct instruction, even in the absence of motor reproduction or direct reinforcement" (Bandura, 1971, p. 3).

Social media: "A group of web-based applications that build on the ideological and technological foundations of Web 2.0 and that allow for the creation and exchange of user-generated content" (Kaplan & Haenlein, 2010, p. 61).

Technology identity: An individual's perspective about his or her technology skills, access or lack of access to technology, the significance of technology in his or her life, and his or her desire to place technology into his or her learning schema (Goode, 2010, p. 498).

Technoself: Deals with "all aspects of human identity in a technological society focusing on the changing nature of relationships between the human and technology" (Luppicini, 2013, pp. 1-2).

Assumptions

For this study, the following assumptions were made: (a) participation in the study was voluntary; (b) participants were classified as at-risk according to NCES (1992) criteria; and (c) the answers provided in the interview process reflected the truth as the participants perceived it. The principal of the chosen charter school provided access to the participants. It was assumed that there was no coercion to participate and that the selected students qualified under the appropriate definition of *at-risk*.

Scope and Delimitations

Through this qualitative case study, I sought to document the perceptions of and influences on three unique populations of at-risk students who attended a charter school. Members of the first group were considering dropping out of high school. The second group had dropped out but returned to high school. The members of the third group had dropped out and were considering returning to high school. The context of the interviews included the formation of a technology identity, how social media and personal learning networks played a role in participants' lives in and out of school, and how participants used informal learning strategies in their formal learning within the school setting. Students had to attend or plan on attending the cooperating charter school. Students had to fall into one of the three dropout conditions. Age was the final consideration. All

participants had to be over the age of 18 to ensure that the subjects could sign their own consent forms.

The findings from this study may serve to guide further research on how technology can play a role in motivating students to stay in school and complete their high school diploma requirements. The understandings derived from this study may provide insights concerning how these populations of students approach learning through the integration of technology. The findings may have the potential for application to other high school settings across the United States. A more complete picture of what constitutes a technology identity for high school students could be one of the more important outcomes of this study.

Limitations

The primary limitation for this study was the use of a single charter school. The school draws from a number of surrounding districts. The entire population carried the *at-risk* designation and fell under the dropout criteria specified for the study. Not all the students satisfied the age requirement of this study. The socioeconomic, geographic, and cultural backgrounds of the charter school population mirror those of the surrounding school districts, which may add weight to the ability to transfer the findings. Yin (2009) indicated that single case study designs are "vulnerable" due to the lack of contrast, inability to conduct a critical analysis through contrast, and the loss of "direct replication" (p. 61). Because this case was revelatory, single case study design was appropriate (pp. 48-49).

A second limitation was the truthfulness of the students. Descriptions of technology prowess, use of social networking, and interactions with personal learning networks could be under- or overstated. Visits to participant social networking pages or other virtual connections would have provided a more accurate representation but could have resulted in the expression of my view as opposed to the participant view. Interview questions were used to determine participant veracity and to create an unbiased depiction of technology identity, use of social media, connection with personal learning networks, and integration of informal learning strategies in an educational setting.

Significance

For America to remain competitive on the world stage, the nation must maintain an educated and informed populace (*United States Education Reform and National Security*, 2012). Students who do not graduate from high school face a variety of difficulties. They have difficulty finding and maintaining employment, they are more likely to participate in illegal activities, and they are often incarcerated. In addition, their earning capacity is sharply lower than that of their high school diploma-earning peers (Bowers & Sprott, 2012; Lemon & Watson, 2011; Schoeneberger, 2012). Over 7,000 students drop out of U.S. high schools every day (NCES, 2014). The results of this research may contribute to the field of educational technology by providing insights into influences of and perceptions about technology identity, social media, personal learning networks, informal learning, and formal learning for the populations of at-risk high school students participating in this study.

Information derived from this study on whether the participants functioned within a connected world and how those connections affected their educational experiences has the potential to be applied to efforts to reduce the dropout rate, increase students' motivation to succeed and improve the economic future for high school students. Individuals' motivation, societal connections, engagement, and social learning were crucial considerations the interview process. The data from the study may provide stakeholders with additional means of providing effective educational interventions toward the goal of achieving a high school diploma. In addition, the data may help define strategies that will help educational stakeholders create approaches incorporating technological connections in support of the students' learning goals.

The results of this study documented the learning needs, communication preferences, and technology identity choices for students at risk of failure through an analysis of three unique groups of at-risk students. Despite numerous interventions and accommodations, at-risk students continue to turn away from the traditional, formal educational system. This study provides an indication of why some students no longer feel that high school is meeting their needs and how social media and personal learning networks play a role in keeping them in school. The results help to fill a gap in the literature pertaining to student perceptions about technology and their use of social media to make connections to their peers within the educational setting, unknown individuals outside the school setting, and mentors both inside and outside the school setting within personal learning networks.

Summary

Education in the United States is slowly changing to meet the needs of the country as well as the individual needs of students. For the United States to maintain a robust and vibrant economy, all citizens must be educated and remain informed about relevant events. Students who do not achieve the minimum standards associated with high school graduation are less likely to be a positive force in their community or country. The pace at which change occurs within the educational system may have a negative effect on the educational future of the three populations analyzed in this study. A gap in the research exists in the area of how these three populations of at-risk students function within or without the connected world, how they view their technology identities, how they use connections to social media and personal learning networks to enhance informal learning, and how they bring informal learning strategies into the formal educational world. Students from each of the unique at-risk populations were interviewed to determine how they approached each of these topics and where technology may play a role in assisting them in achieving a high school diploma.

Chapter 2 presents a synthesis of the current literature based on two themes. The first theme is the perceptions of students regarding their technology identity using social media and personal learning networks, and how that identity influenced each of the groups. The second theme is the perceptions of students regarding the use of informal personal learning networks within a formal educational setting for either learning contributions or social contributions. The section covering the literature search strategy will allow other researchers to replicate the study across groups. The conceptual

framework provides an examination of Pink's (2009) concept of motivation, Siemens's (2006) theory of connectivism, and Bingham and Conner's (2010) theory of engagement and social learning. The literature review is organized around the research questions with a focus on at-risk high school students. In Chapter 3, I explain the qualitative case study rationale.

Chapter 2: Literature Review

The purpose of this study was to describe how the development of a technology identity through the use of personal learning networks and social media played a role in keeping at-risk high school students in school, influenced students who had already dropped out to consider returning to school, and assisted dropouts who had returned to school in the completion of high school diploma requirements. Bowers and Sprott (2012), Lemon and Watson (2011), and Schoeneberger (2012) noted the many problems associated with a failure to graduate from high school for individual students and for society. The National Center for Education Statistics (2014) reported that in excess of 7,000 students drop out of American schools daily. These dropouts have an estimated earning capacity $10,000 less than their degree-earning peers (U.S. Census Bureau, 2012). Additionally, they are more likely to be unemployed, engage in substance abuse, or be imprisoned.

Strategies adopted by students to reconcile their informal learning schema with the formal learning required in education were analyzed, including the use of personal learning networks, the use of social media, and the development of a technology identity, as was their access to technology both inside and outside the school setting (Greenhow & Robelia, 2009a; Jahnke, 2012a, 2012b). A review of relevant current literature included works related to technology identity (Dunlap & Lowenthal, 2010; Goode, 2010; Greenhow & Robelia, 2009b), personal learning networks (Dabbagh & Kitsantas, 2012; Fischer, 2011; Rajagopal, Brinke, Van Bruggen, & Sloep, 2012), social media (Ahn, 2011; Arnold & Paulus, 2010; Greenhow & Burton, 2011), and the skills needed to be

successful in the 21st century, placing the current study in context. None of the current research found related the use of social media and personal learning networks to the high school dropout problem and at-risk students. This gap in the literature suggested the need for further investigation of the role of personal learning networks and social media in helping to reduce the dropout rate for at-risk high school students.

Organization of the Chapter

Chapter 2 is organized into two sections: a review of current research and the conceptual framework. The review of current research is arranged into two themes. The first theme is how a technology identity using social media and personal learning networks influences at-risk students. The second theme concerns the perceptions of students regarding the use of informal personal learning networks within a formal educational setting for either learning contributions or social contributions. The conceptual framework was based on Pink's (2009) concept of motivation, Siemens's (2006) theory of connectivism, and Bingham and Conner's (2010) theory of engagement and social learning.

The literature review is composed of sections on several topics, beginning with an overview of the current state of American high schools using contemporary research on public attitudes and perspectives about dropouts. The concept of a technology identity is explored, and the effects of personal learning networks in the educational environment are explained. Results indicated the need to evaluate the three populations of students' technology identity as well as their use of personal learning networks and social media as tools to further their educational journey leading to the acquisition of a high school

diploma. The influences of learning and social contributions on informal learning for students were investigated, and no mention of at-risk or dropout populations was discovered.

Literature Search Strategy

The chapter is an organized review of current literature including books, peer-reviewed journals, professional magazines, and websites in both paper and digital formats. Digital databases accessed in this research effort included Questia, ProQuest, the Tye Preston Memorial Library, and the Walden Library. ERIC, SAGE, GoogleScholar, and the Thoreau search of multiple databases were used within the Walden Library. Online search terms and keywords included *personal learning networks, social media, at-risk, low performing, high school dropouts, dropouts, graduation rates, 21st century learning skills, formal learning, media literacy, digital citizenship, digital divide, knowledge gap, innovations, technology identity, technoself, social identity, digital tribe, learning identity,* and *informal learning.* Through examination of hard copies of *Learning and Leading with Technology, The Journal of Computing in Teacher Education, Campus Education, Tech Edge, T.H.E. Journal, The Southwest Educational Development Laboratory Letter, Technology and Learning, Edutopia,* and *Educational Leadership,* I recovered additional material pertinent to this research.

The Walden Library served as the primary source for the initial searches. The reference pages of the recovered documents were scanned for additional resources and authors that might fit the criteria of this study. Metacrawler, a meta search engine, was

used to identify sources for related material. The Walden Library, with its associated databases, was accessed to provide downloadable and printable copies.

Locating material on the topics of technology identity and the impact of social media on high school students who were at risk of dropping out of school was the biggest barrier to this search. Technology identity was a relatively new topic in the literature limited to a small number of researchers. Social identity was brought into the search to broaden the scope of information. No research was found that addressed technology identity as it pertains to at-risk high school students. A wealth of current literature was found on the topics of social media and personal learning networks. Only one article addressed the topic of low-income students in the United States using social media. A second study from Norway analyzed an immigrant population of 16 to 20 year olds using social media but did not address their school performance or how social media might have been used in a learning context. The search continued through a weekly scan for new information within both print and digital sources.

The Current State of American High Schools

Carson (2013) stated that "a well informed and educated populace" is needed to sustain the United States and that "when [people] become less informed, they become vulnerable" (Fellowship Foundation National Prayer Breakfast, 2013). Balfanz (2009) identified the mission of high schools in the United States as "developing economically self-sufficient adults and cultivating an educated citizenry" (p. 5). Kuh (2007) indicated that four-fifths of the students graduating from high school would need to continue their education at the college level to become financially independent and to allow the United

States to be "economically competitive" (p. 1). A review of the 2009 and 2012 Phi Delta Kappa (PDK)/Gallup Poll (Bushaw & Lopez, 2012; Bushaw & McNee, 2009) provided insight into two of the areas for concern within this study: dropouts and technology. Since the inception of the PDK/Gallup Poll in 1969, the first item has asked American parents to "describe the biggest problem facing public schools in their community" (p. 1). Lack of funding has remained the number one concern expressed by the surveyed group since the year 2000 (p. 12). When asked if it was more important to improve the educational system or balance the federal budget, 60% felt balancing the federal budget took precedence (p. 18). In the 2009 study, when asked if their children were receiving an education that was "better or worse" than their own, 41% said "better" and 50% said "worse" . These two statistics point to potential problems in the educational system as perceived by parents.

The Phi Delta Kappa/Gallup Poll created four questions new to the survey in 2009 to determine if the American public agreed that dropping out of high school prior to earning a diploma was a serious problem. The questions also asked for solutions to the dropout problem (Bushaw & McNee, 2009, p. 14). The 2009 study found that 9 out of 10 respondents believed that the dropout rate was the most important or one of the most important issues facing American high schools. In 2012, the PDK/Gallup Poll asked "how important a problem" the dropout rate was in U.S. high schools; 18% of parents with school-aged children stated it was the most important problem, and 71% cited it as one of the most important problems (p. 11).

In 2012, in response to a call by President Obama during his State of the Union address, respondents were asked if a nationally mandated dropout age should be established at 18 years. Sixty-three percent agreed (Bushaw & Lopez, 2012, p. 20). Eighteen states and the District of Columbia already comply with this age limitation. However, Whitehurst and Whitfield (2012) found that increasing the age for compulsory attendance to 18 actually increased the number of dropouts as well as the associated cost of keeping a student in school for an additional length of time. Whitehurst and Whitfield found that setting age guidelines was not an effective method of bringing students to graduation.

The statistics shared have implications for the future of education in society. Gifford, Evans, Berlin, and Bai (2011) cited high school graduation as the number one indicator for success as an adult. They found that high school graduates were better equipped and more successful as they matured, earning higher salaries, becoming better citizens, and staying healthier. In addition, high school graduates were more law abiding when compared to dropouts. In their research, they found that while 24.5% of the total high school population failed to graduate, the gap between graduation rates reported by ethnic groups demonstrated a disparity. For instance, among African American and Hispanic students, 36.7% and 34.8%, respectively, failed to graduate, whereas among their Caucasian and Asian classmates, 18.4% and 7.5%, respectively, did not graduate (p. 4). The discrepancy exhibited by these percentages shows the need for interventions to narrow the gap for all groups.

In the PDK/Gallup Poll (2009), when asked about factors that might contribute to the dropout rate, 61% of those surveyed felt that classes were uninteresting, 83% felt that students failed too many classes, 64% felt that suspensions or expulsion contributed, and 80% felt that students leaving to work outside of school or to become parents was a contributing factor. The final question in this section asked for ideas that might help stem the tide of dropouts. None of the four suggested solutions was seen as effective, which highlights a question: If none of these solutions is plausible, what else could be attempted to help students remain in school and graduate?

The PDK/Gallup Poll reports recognized educational innovation using technology as a topic of concern for parents, citing a popular education book, *Disrupting Class*, by Christensen, Johnson, and Horn (2008) and the introduction by Kappan of a new journal column on educational innovation. Instead of asking a question specifically about innovation, the PDK/Gallup Poll attempted to determine whether Americans thought their schools were "moving in the right direction" (Bushaw & McNee, 2009, p. 17). If the answer was yes, additional questions asked what could keep the momentum going. If the answer was no, additional questions asked what was holding them back.

The first question about educational innovation asked respondents whether schools were on the right or wrong track; 48% stated that schools were on the right track, and 51% stated that they were on the wrong track (Bushaw & McNee, 2009, p. 9). This response might point to a willingness to bring more innovation into the school setting. When asked to identify contributing factors to continue moving in the right direction, 62% felt that funding was a factor, 82% chose better teachers, 63% selected better use of

technology, and 85% noted better parent support. Bushaw and McNee (2009) reported that 38% thought that school choice played a role. When asked what was holding their own schools back, the largest percentage of respondents (71%) indicated a lack of funding. The other three factors were lack of community support, lack of teacher support, and the belief that the current state of education in their community was "good enough already" (p. 9). These three aspects were evenly split between not having an effect and having an effect. This result seemed to point to people seeing the problem as being somewhere outside their own schools. The 2012 report indicated that respondents felt that the problem might lie in the achievement gap between urban and suburban schools. Ninety-seven percent felt that the achievement gap was important or very important (p. 13). This perception is well substantiated in the majority of findings from current research reported in this chapter. A thorough understanding of current perceptions of the dropout situation presented in contrast to research presents a clear picture of the problem and provides a basis to continue a discussion about possible solutions.

At-risk Students

Students who are in danger of dropping out of school are given the label of being at-risk. Factors that contribute to this designation include coming from a single parent family, being eligible for welfare or food stamps, living in a home where English is not the primary language spoken, and having parents or guardians who did not graduate high school. Each state may add criteria to this definition. For the purpose of this study the National Center for Education Statistics (NCES, 1992) criteria were used. This list of criteria was chosen because it is a broad description used as the basis for state definitions.

A student at risk of dropping out of school includes each student who is under 21 years of age and who:

1. comes from a single-parent family, is overage for their peer group, or who has frequently changed schools;
2. has parents not actively involved in the student's school, who never talk to the student about school-related matters, or who hold low expectations for their child's future educational attainment;
3. repeated an earlier grade, has histories of poor grades in mathematics and English, or does little homework;
4. often comes to school unprepared for classwork, frequently cuts class, or is frequently tardy or absent from school;
5. teachers identify as passive, frequently disruptive, inattentive, or is identified as an underachiever; and
6. is from urban schools or schools with large minority populations. (NCES, 1992, p. vi)

This set of statistics was pertinent because it established a baseline for the population of students to be studied. The statistics also provided a clear picture of students who have the potential to fall into the next category, dropouts.

Dropouts

According to the National Center for Educational Statistics (NCES) in the U.S. Department of Education there are two types of dropout: event and status (2014). The event or annual dropout rate is the number of students in any given year who leave school

before earning a high school degree or equivalent. A status dropout rate is the cumulative measure of dropouts within a specific age range. The range is established by each state. In the state in question this age range is 15 to 24 (2011). This study focused on students in the upper ranges of this population, ages 18 to 22.

These two terms, status and event, set the stage for a discussion about indicators that might cause a student to dropout before the completion of their high school requirements. Definitions vary from state to state, however the core definitions are reflected in all individual state descriptors. The individual state definitions play a role in the inability to establish a true snapshot of both high school completion and dropout rates nationwide. For the purposes of this review the definitions provided by NCES were applied (2014).

Morse and Jutras (2008) indicated the dropout problem might not lie entirely with teachers, the economy, or technology. They found that students who felt they had no impact on their own learning viewed their failures through two lenses. In the first case students saw success as the result of good luck and failure because of bad luck. In the second case students viewed their teacher as the only person who could determine their success or failure. Placing full responsibility on the teacher allowed students to avoid accountability and make the least effort possible when taking part in their educational experience (p. 244). Even if the teacher in this situation was rated by evaluation as highly effective and the course had a creative and interesting structure, if the students believed they would not succeed, they would not be successful. The evidence indicated that students do not understand as much as they should about learning and why certain

teaching strategies might be used in a particular classroom situation. The authors argued the reasons behind particular educational practices needed to be explained to both students and parents to help them discover more about their ability to learn, gain motivation, and alter their personal perceptions. Duckworth (2013) in her study of grit found that explaining the concept of perseverance to students allowed them to see their shortcomings as chances to improve and changed their self-perceptions. The use of personal learning networks, social media, or informal learning were not mentioned by Morse, Jutras, or Duckworth as possible solutions to the dropout problem or the explanation of what it took to be successful in school.

High stakes testing could be another factor in the dropout equation. The first white paper that brought negative attention to the state of education, *A Nation at Risk* (Gardner & Larsen, 1983), pushed the United States toward a testing culture in the name of moving toward excellence in the educational system. Testing purportedly assured high school diplomas had meaning and value. Reardon, Atteberry, Arshan, and Kurlaender (2009) and Bracey (2009) found that exit examinations decreased graduation rates by an average of one to two percentage points. In states and districts with large populations of poor, minority, or low achieving students the percentages were significantly higher. The authors were not able to determine if this disparity was created by racial and socioeconomic differences or if the outcome would have been identical if the research had been able to include the factor of academic achievement. Little evidence demonstrated the effectiveness of exit exams on academic achievement, the primary purpose of this summative assessment (p. 9). Exit exams have not raised achievement

levels and at the same time they may have lowered graduation rates particularly for minority groups and young women (Reardon et al, 2009, p. 40). This study did not address the issue of high stakes testing, however understanding this is the primary assessment standing between a student and their diploma makes it a critical element in the background of this study.

Other consequences of the 1983 white paper included rigid content requirements through the implementation of core standards and competencies resulting in a single-minded focus on one set of measurement instruments. Budget strapped schools often eliminated electives, the arts, and innovations in order to provide remediation for failing students (Siegel, 2009, p. 704). Berliner (2009) pointed to the narrowing of curriculum to focus on test requirements under the No Child Left Behind (NCLB) Act. An unbalanced focus on reading, writing, and mathematics has placed all other subjects in a position of lesser value to students particularly when those students are part of a minority population (p. 284). In a 2006 report, Jennings and Rentner found 97% of the high poverty school districts surveyed had instituted polices placing constraints on the curriculum available to their students. Greenhow and Burton (2011) reported 35% of students between the ages of 13 and 17 live in low-income households in the UNITED STATES (p. 224). Siegel (2009) found that when students are not allowed to set their "own course" in the school setting they are ill prepared to "steer their own course" after graduation (p. 741). The dichotomy between formal learning used almost exclusively in the educational setting and informal learning predominately used outside the classroom was not a part of Siegel's research.

A 2006 study of data taken from the National Educational Longitudinal Study conducted by Deke and Haimson (2006) found that the most significant predictor of student success was attributed to nonacademic competencies including work habits, sports, leadership, social interactions, and a feeling the student was in charge of his or her own destiny. Robertson and Duckworth (2013) indicated similar results in their work on grit. Kenny, Walsh-Blair, Blustein, Bempexhat, & Seltzer (2010) found that additional nonacademic factors included an expectation of success, a positive perspective for the future, and a sense of autonomy to be strong indications for student accomplishment. These competencies have only a tangential relationship to academic assessment under the No Child Left Behind Act (NCLB); however they appear to have a strong contributing relationship to student success in their lives after school. Personal learning networks and social media could play an instrumental role in supporting and fostering these nonacademic competencies particularly in the area of social interactions.

Bridgeland, DiIulio, and Morison (2006) gave a voice to the students and provided a glimpse of their thinking about leaving school. While no seminal reason was given for their decision, 47% indicated that "classes were not interesting" (p. iii), a response that was echoed by their parents in the PDK/Gallup Poll (Bushaw & McNee, 2009; Bushaw & Lopez, 2012). Respondents also indicated they associated with others who felt the same way. In contrast high achieving students indicated they associated with others who were "motivated to work hard" (p. iii). Seven in ten students who dropped out indicated they were "not motivated or inspired to work hard" (p. iii). Seventy percent felt they could have graduated if they had been challenged by more homework, higher

standards, and additional opportunities to study. Thirty-two percent left to find employment, 26% became parents, and 22% departed to care for a family member. Many students in these three groups were academically proficient, but found support for their unique situations lacking. Thirty-five percent dropped out due to failing grades because of either poor schoolwork or too many days absent from school; while 45% indicated they were not prepared for high school by their elementary and middle school teachers. This group felt they could have been successful if additional support in the form of tutoring, after hours help, or other additional resources within the school day had been made available. Thirty-two percent had to repeat at least one grade level. Jimerson, Ferguson, Whipple, Anderson, and Dalton (2002) found students who have been retained had up to an 11 times higher dropout rate than their promoted peers. Over 80% of the respondents indicated they understood the importance of a high school diploma in determining their ability to be successful and 74% said that if they had it to do over again they would have stayed in school (2006, p. iii).

The decision to leave high school appears to evolve rather than occurring as a sudden event. In the year prior to dropping out 59% to 65% of the students questioned indicated they had problems with attendance. Of these students, 38% felt at least part of the problem was a result of a lack of structure and rules both at home and at school. This newfound freedom led to skipping classes, oversleeping, and extending lunch breaks away from campus. Indications were that when a student took time away from school, it led to more time away from school, which led to poor grades and a continued lack of involvement with the school community (Bridgeland et al., 2006, p. 8).

Tyler and Lofstrom (2009) listed a number of "risk factors" or dropout "predictors." Poor test scores, failure in a class, or retention in grade level are all strong indicators of a student preparing to leave school. Poor engagement, a high number of absences, and discipline issues demonstrated a strong correlation to dropout potential. Other factors included parenthood, working more than a few hours a week outside of school, and family indicators including parental educational levels, occupations, income, stability in the home, and involvement in school. These indicators correspond with those discussed by Bridgeland et al. (2006).

Bill Gates reviewed the state of education for the National Education Summit on High Schools.

> When I compare our high schools to what I see when I am traveling abroad, I am terrified for our workforce of tomorrow. In math and science, our fourth graders are among the top students in the world. By eighth grade they are in the middle of the pack. By twelfth grade, US students are scoring near the bottom of all industrialized nations. We have one of the highest high school dropout rates in the industrialized world. Many who graduate do not go to college. And many who do go on to college are not well prepared and end up dropping out. This is one of the reasons the US college dropout rate is one of the highest in the industrialized world. The poor performance of our high schools in preparing students for college is a major reason why the United States has now dropped from first to fifth in percentage of young adults with a college degree. (Gates, 2005, p. 3)

The latest information from the Council on Foreign Relations task force paper (2012) found that 40% of Americans aged 55 to 64 hold a college degree tying Canada for the top spot in this category. Of Americans aged 45 to 54, 40% hold a college degree putting the United States in third place behind Canada with 44% and Japan with 43%. In the 25 to 34 age range, 41% of Americans hold a college degree putting the United States in 10th place behind the Republic of Korea with 58% followed by Canada, Japan, New Zealand, Norway, Ireland, Denmark, Belgium, and Australia. In six years the United States dropped from fifth to 10th place.

Finland had one of the highest outcomes on the Programme for International Student Assessment (PISA) given to 15-year-old students from 67 countries every three years. Finland does not have accountability testing, and their teachers and administrators are allowed a great deal of latitude with regard to curriculum selection and development. The high school graduation rate is over 90% and the dropout rate is 2% (*United States Education Reform and National Security*, p. 290). In contrast current efforts in the United States to stem the flow of students away from high school do not appear to be effective.

The latest Pew Research Center (Madden et al., 2013) findings into technology use by teens between the ages of 12 and 17 discovered smartphone use has risen substantially. One in four teens indicated they used only their smartphone to access the Web. Seventy-eight percent of all teens surveyed had a cell phone with 47% of those being smartphones. Twenty-three percent had access to a tablet computer. Ninety-three percent owned a computer or had access through a shared computer at home. Ninety-four percent had access to the Web through a computer, tablet, or smartphone (p. 2). The

levels of connectivity and access are rising. Helping students find their technology identity and fully utilize their personal learning networks through a wide range of social media sources for learning may provide a needed bulwark for keeping them engaged in the educational process.

Conceptual Framework

Three theories comprise the conceptual framework for this study: Pink's (2009) concept of motivation, Siemens's (2006) connectivism theory, and Bingham and Conner's (2010) theory of engagement and social learning. The conceptual framework provided a structure for the student interviews about their technology identities. Their individual stories provided clues to reasons for failure to succeed in the high school setting. The social implications and long-term effects of their failure were discussed using the lenses of motivation, ability to make and sustain connections, and engagement in society.

Pink's Concept of Motivation

Pink (2011) is an author who used over 50 years of social science theory to describe a new concept of motivation for both the business and educational worlds. He described the three drives or motivations found in human nature: reward, punishment, and intrinsic. Reward and punishment are often illustrated by the carrot and stick approach. Incentives are offered and progress is closely monitored. If progress is judged adequate more incentives are provided. If progress is not adequate punishment is applied. This system was long used in educational and business settings. When tasks were routine, lacked mental challenge, required only lateral thinking, and were highly controlled the

carrot and stick approach was deemed adequate. Over time it was found this approach was flawed and harmful to intrinsic motivation or what Pink called the third drive needed to build success and positive motivation.

Intrinsic motivation is the personal joy found in accomplishing a task. Pink (2011) conceptualized that the need for autonomy, mastery, and purpose assured a balanced approach to achieving intrinsic motivation. Autonomy in education was described as the four Ts: time, task, technique, and team. Time allowed students to determine how long it will take to complete an assignment. Task provided choice for what would be completed. Technique allowed learners to determine how the task would be finished. Team was the collaborative component providing communities of learners the opportunity to work together toward a common goal. Mastery was building on previous success to become more skilled over time in areas of interest to the learner. To determine areas of interest, teachers could employ interest inventories, surveys, interviews, and journaling to discover the best way to support a student as they build mastery skills. Purpose provided students with a connection larger than their own singular focus. Pink emphasized that students must see themselves as a part of a school community, a caring classroom, and an educational team.

Nordgren (2013) analyzed the educational reform movement in Sweden to observe Pink's (2011) concept of motivation in practice. The author focused on four areas:

- Trust within the schools and for schools by the general public
- Democracy as found in shared governance and as a value

- Student responsibility in a learning environment that supports self-direction
- Global Workforce Competence (teamwork, critical thinking, technology literacy, and entrepreneurship-creativity and risk-taking). (p. 3)

Nordgren reported that the Swedish school system concentrated on pedagogy and student learning rather than focusing on student behavior using a "values-laden" national curriculum (p. 4). Unlike the U.S., mandatory attendance to upper secondary school, the rough equivalent of our high school, is not mandatory. After age 16 Swedish students are not compelled to attend school, but 73.2% of the population continued to attend and graduated (p. 4). The research revealed the reason for continued attendance was the students' view that it was their "responsibility to learn." This was a demonstration of intrinsic motivation (p.5).

Freedom was uniquely connected to responsibility (Nordgren, 2013). To this end teachers had half their day allocated to planning allowing for team contact and other activities the teachers deemed relevant. Student attendance was not of importance either since they worked from an "individualized educational plan" placing the focus on the final product and the knowledge gained from the activities (p. 5). The high level of autonomy practiced in the school setting translated into the workforce creating a "collaborative management style" that maintained job satisfaction and high employment numbers (p. 8). For the students in my proposed study, finding what motivates them, how they approach problems, and how they find purpose in their learning could provide clues to keeping them in school to complete their high school requirements.

Parker (2012) explored how low-income, minority population schools could employ the elements of Pink's (2011) concept of motivation, autonomy, mastery, and purpose, to close the achievement gap. A comparison chart of motivators using the carrot and stick approach versus Pink's motivators was used to prepare teachers for the coming Common Core Standards. The goal was to close the achievement gap during the 2014 school year. While significant gains were made during this study the final goal had not yet been reached at the time of publication. The population in the Parker research is similar to the proposed population in this study. While Parker's research focused on teachers rather than students, the infusion of Pink's principles into their educational practice had a significant impact in moving toward the stated goal. Identifying the elements of motivation: autonomy, mastery, and purpose, for the students in the proposed study can provide a clear picture of perceptions of formal and informal learning experiences as well as how technology identities were formed.

Maccoby (2010) expanded on Pink's (2011) concepts finding Pink's ideas did not work for all individuals in all situations. Using data to determine students with high-test anxiety from those with low-test anxiety, Maccoby placed students in random groups. Some groups were offered rewards to complete an assignment appropriately and other groups were not. His findings indicated students with high test anxiety did better when there were no rewards. Students with low test anxiety did better when rewards were offered. He postulated that rather than applying the same motivational techniques to all students, a mix of four motivational techniques was required. Maccoby called these the four Rs: responsibility, relationship, reward, and reason (p. 60). The theory was tested by

surveying a population of 150,000 technology employees in over 100 countries. The results indicated when responsibilities on the job were significant and took full advantage of capabilities, motivation and job satisfaction increased. Positive relationships between employers, personal learning networks, and clients impacted motivation. Rewards could be intrinsic through appreciation, or extrinsic through recognition or monetary compensation. This is an area where Maccoby agreed with Pink that extrinsic motivation, particularly through bonuses, could leave employees unmotivated and did not create a drive toward superior performance. The research found the reason behind work was the most significant motivator. In particular, Chinese workers reported having a strong sense of patriotism and were "proud" to help their country become prosperous and powerful (pp. 60-61). While this study focused on employees rather than students, supplementing questions about Pink's concepts with Maccoby's four R's could provide a more in depth picture of motivation for the population in question.

Gobble (2012) used Pink's (2011) ideas coupled with the concept that bringing the appropriate group into the correct environment would create success through two seminal elements: "culture and talent" (p. 66). Her research demonstrated the role managers played in either fostering or stifling innovation. The findings indicated communication, intellectual challenge, salary, and bonuses were primary motivators of innovation when they were employed properly (p. 67). The findings closely follow Pink's ideas and rationale for movement away from the industrial management model toward a model supporting autonomy. In this case employees had a voice in company goals, mastery of learning as an integral component of value within the organization, and a

shared purpose to stimulate innovation. While Gobble's study focused on business entities, the findings have relevance for the proposed study in finding the balance between fostering or stifling motivation to complete high school diploma requirements.

The research supported Pink's (2011) concept of motivation and the three contributing factors, autonomy, mastery, and purpose. Sustaining the ability of students to understand how motivation influenced their perceptions of the effort needed to succeed in both formal and informal educational opportunities is a superior indicator for success (Duckworth, 2013, p. 2). The research demonstrated that employing social media and personal learning networks lead to increased motivation and a higher level of educational success. Siemens's connectivism theory is a logical focal point for this topic.

Siemens's Connectivism Theory

Siemens (2006) developed the theory of connectivism. He had a strong connection to the way knowledge acquisition evolved in the face of changing societies in the digital age. Siemens detailed a shift that has occurred from "categorization and hierarchies to networks and ecologies" (p. v). Hierarchies, according to Siemens, are static, structured, stable, managed, bounded, centralized, certain, and filtered. In contrast, networks are dynamic, flowing, equitable, connected, participant and process defined, decentralized, adaptive, and emergent (p. 91). Networks allow people to communicate and share knowledge through online dialogues. These dialogues take the form of blogs, wikis, podcasts, vodcasts, social networking sites, and online communication devices like Skype or other instant messaging devices. Ideas can be seen and evaluated by a diverse group of participants from the next classroom or around the globe: learning networks.

Siemens (2006) stated that knowledge is connected and ongoing. Gaining knowledge takes place by creating connections to what we "see, know, and function in connections" (p. 4). Technology enhances these connections allowing them to take place anytime, anywhere. The connections people create broaden and deepen their knowledge and enhance their access to knowledge. Siemens called this connectivism (p. 15). Connectivism is knowledge created through a "network-forming process" (p. 29). This theory illustrates how learning occurs in the digital age.

Siemens found connective knowledge networks have four traits: diversity, autonomy, interactivity, and openness (2006, p. 16). Diversity allows all users to participate at the highest possible level. Autonomy allows the users to express their opinions freely without restriction from outside entities. Interactivity allows users to produce a product that is a true representation of all the interactions leading to knowledge rather than an aggregation of ideas. Finally, openness allows all users to participate at an equal level if they wish. While Siemens described learning as both external or networked and as internal or neural both types of learning are connections created through the recognition of patterns of understanding (p. 29). The more connections people are able to make, the more adaptable they become in creating new connections and new adaptations (p. 73). Siemens did not address intelligence directly in his writings. Rather he used a quote to allow readers the ability to understand his view of intelligence and how it is connected to knowledge and learning. Siemens quoted Cecil (2006) "The first step toward knowledge is to know that we are ignorant" (p. v).

If ignorance is the antithesis to intelligence then Siemens believed people must use their intelligence to gain knowledge. For Siemens, "All knowledge is information but not all information is knowledge" (2006, p. vi). An examination of hits from a web search may support Siemens's point. Within the list of many of the links, the user will find information that has no relationship to the original question. The ability to form the correct set of search terms is critical to obtaining the desired outcome. Siemens felt critical questioning was an area where students needed to be proficient. The phrase *garbage in, garbage out* has relevance to his theory. When the wrong question is asked, the wrong answer can lead to incorrect and often misleading conclusions.

To be accomplished questioners students require a new set of learning skills. Siemens (2006) suggested the following skill set. Anchoring will be used to stay focused on a particular task in the face of outside distractions. Filtering will allow the student to manage information and recognize the most pertinent data. Connecting with each other will build networks allowing an easy flow of the newest information. Being human together will allow the learner to build social spaces. Creating and deriving meaning will allow the student to evaluate information for its impact. Evaluation and authentication of the data ensures validity and veracity. Altering the process of validation puts the people and the process in the correct context. Critical and creative thinking encourages the learner to question and think outside the box. Pattern recognition is critical to the identification of trends. The ability to navigate the knowledge landscape permitted the learner to move between people, technology, ideas, and information easily while achieving the intended outcome. Accepting that knowledge is not definitive will allow

the student to balance what is known with the unknown and to find relationships between the two. Finally, Siemens suggested contextualizing, understanding the context of any given piece of data, was vital to understanding (p. 113).

Siemens (2006) stated knowledge was not static. He saw knowledge acquisition as connections. Learning takes place when students are exposed to a network forming process. Understandings are constantly being evaluated, sorted, considered, taken out, put back, connected to previous knowledge or another persons' ideas, used, modified or discarded. He described five types of knowledge.

> *Knowledge ABOUT* . . . news events, basics of a field, and introductory concepts in a discipline.
>
> *Knowledge TO DO* . . . drive a car, solve math problems, code a problem, conduct research, or manage a project.
>
> *Knowing TO BE* . . . to embody knowledge with humanity (doing blended with consistency and daily existence), to be a doctor or psychologist (mannerism, professionalism), to be an ethical person, to be compassionate, to relate, to feel.
>
> *Knowing WHERE* . . . to find knowledge when needed through web search, library, database, an organization, and increasingly, knowing who to approach for assistance.
>
> *Knowing TO TRANSFORM* . . . to tweak, to adjust, to recombine, to align with reality, to innovate, to exist at levels deeper than readily noticeable, to think. The "why of knowing" resides in this domain. (Siemens, 2006, p. 10)

Siemens saw the Internet and other digital connections as powerful methods of gaining knowledge. He recognized the need to be able to analyze, evaluate, and synthesize the knowledge as a skill set all students must learn. Education in how to evaluate web content, use effective searching techniques, work within blogs and wikis, and communicate appropriately with email and through social networking sites needed to be a part of a standard program of study. Integrated and collaborative curriculum needed to be incorporated in the classroom regularly allowing students to make connections with each other as well as with groups of peers outside the classroom or experts in the content being covered. Resources on the Web maintain a virtual memory of everything that is typed, videotaped, shared, or said. A person's words can help or hurt them. When people share what they know it is imperative the information be accurate and truthful. Siemens said:

> Knowledge can be described in many ways; an entity and a process, a sequence of continuums: type, level, and application, implicit, and explicit, tacit, procedural, declarative, inductive, deductive, qualitative, and quantitative. Knowledge rests in an individual and resides in the collective where the collective is the community. (p. 14)

This statement brings the understanding of knowledge back to the personal interpretation each individual brings to information. That interpretation was impacted by the individuals' culture and upbringing. Siemens called communities "connection forming spaces" (p. 112). Before the Internet people often operated in their own worlds influenced only by those in close physical proximity to them. The Internet changed the ability to

access information and build understandings influenced by groups around the world. The results from any Web search demonstrate the ability to look at a problem from multiple perspectives. Searches can present several pages of links for further evaluation. The links are often listed in order of their agreement with the search term. Once a link is selected the searcher can go to an instant messaging system or social networking site to chat with other groups about the issue. This group of contacts, the personal learning network, may be local but more likely will include virtual friends from around the globe. Sometimes the website will provide links to see how others have rated the solution. The searcher is able to read what others think and sometimes see how they rate the idea or product; five stars, four smiley faces, three thumbs up. Technology can be used to instant message, speak to, or see friends from around the world to elicit their opinions in synchronous conversations. Searches can be conducted to confirm the veracity of chosen websites. The barriers to effective communication are being reduced.

Siemens (2006) described the above scenario as immediacy stating that "knowledge flows in real time" (p. 74). The Internet provided access to information anytime and anyplace. The flow is dictated by the size of the Internet connection and the speed of the computer. It can be inhibited by the skill of the user. Helping students learn how to effectively use the Web, evaluate resources, and become skilled in their interactions with others will help to expedite a flow of quality assets and communications. For this reason learning will not end with the end of formal schooling but rather be continuous throughout a lifetime. Knowledge is not something that can be attained as a goal of learning (p. 3). The changing nature of how knowledge is acquired

and stored obliges a reevaluation of theories and consideration Siemens's connected ideas.

One concept Siemens (2006) introduced was the shift from know-how and know-what to know-where (p. 93). Siemens believed students need to be effective searchers of information rather than being able to recite information verbatim. Siemens presented a comparison of current learning theories contrasting them to his own connectivism ideas making a strong case for why a shift in thinking was needed. The eight principles of connectivism have been updated from his original concepts bringing implications for how connectivism could impact lives in the classroom, in business, and at home.

- Learning and knowledge rest in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to

> alterations in the information climate affecting the decision.(Siemens, 2005, p. 7)

The principles explained the changing nature of knowledge. As new information is processed it is determined to be significant or unnecessary. The ability of an individual to create these distinctions and to recognize the impact new knowledge has on events or decisions that follow is critical to knowledge acquisition and constructs the connections to past and future learning (p. 7).

Siemens (2006) addressed the concept of identity within the connected world. While he did not use the term technology identity, his concepts of having knowledge and being known virtually closely mirrored those of Goode (Siemens, 2006, p. 72). However, rather than seeing an integrated identity, Siemens described the individual as "distributed" across the Web in blogs, wikis, podcasts, and in any comment left in virtual forum where others might read, react, and respond. He also found technology identity provided the opportunity to form personal learning networks for the purpose of "collaboration, socialization, and doing things together" (p.72).

Siemens's conceptualization of connectivism has broad implications for my study. Determining the perceptions toward and influences of a connected world for at-risk high school students from the three described groups provided insights about the circumstances surrounding their decisions with regard to their education. Their technology identity is also a crucial factor in determining their ability to build and sustain personal learning networks that may maintain and enhance knowledge acquisition.

Martinez (2012) explored the integration of technology-enhanced learning (TEL) into an undergraduate Spanish course where online learning opportunities were coupled with a face-to-face component. A reflective blog was used to accompany a traditional classroom venue. The blog provided learners practice in reading, writing, speaking, and hearing a foreign language. Comments from teachers and classmates provided an incentive for accuracy and served as part of the assessment process. Training sessions were held prior to initiating the blog to assure postings and comments would contain the required reflective elements. A choice for method of posting and commenting including audio, text, video, or still images was provided, but the majority of students used text only. The one area students experienced difficulty was decision making particularly when they were directed to select their own topic for reflection (p. 209). For Siemens (2006) decision-making was the learning process. Martinez felt a "lack of experience" was the root of this problem. The findings of this study suggested students needed to experience more autonomy, interactivity, and openness in their educational experiences. Identifying perceptions about informal personal learning networks and formal learning is one of the goals of my research.

Ravenscroft (2011) viewed connectivism from a social constructivist perspective through the use of dialogue. His premise was that social networks were "a new landscape for dialogue" (p. 139). His research into the use of dialogue games to apply the theory of connectivism established that dialogue played a critical role in the building of knowledge where virtual spaces devoted to learning were employed (p.155). Players of the dialogue game, InterLoc5, were provided with a prompt to which they could either contribute or

reply. Contributions furthered discussion of the topic while replies were responses to other postings. Specific contribution or reply categories were supplied as a part of the game such as I *agree because, I disagree because, I think, Let me elaborate* (p. 151). Ravenscroft asserted this game was an example of learning facilitated by a non-human appliance.

A variation of the game, coupled with social bookmarking and collaboration allowed the participants in the personal learning network to set their own questions and let users exercise a higher level of control of the knowledge content. By adopting the theory of connectivism, Ravenscroft described a new design for learning where the individual, their social interactions, and their personal learning network were the primary focus of the design as well as the connected technologies employed (p. 155) reasoning that "language and dialogue are our oldest and arguably still the most powerful semiotic system" (p. 156). While dialogue is not a focus for my study, the concepts described by Ravenscroft further support the inclusion of Siemens's theory of connectivism.

Couros (2010) facilitated an educational course that was open to all who wished to enroll. The graduate level course, "Education, Curriculum, and Instruction: Open, Connected, Social" was free and utilized open source software, resources, and services at no additional cost (p. 109). Students were required to build a personal learning network (PLN) that implemented six of Siemens's (2006) eight principles through the creation of knowledge networks. The original class of 20 students grew to 220 individuals from all walks of life around the world.

Couros (2010) chose to use a wiki as the primary setting for the course, which included assessed requirements for a blog or online portfolio, the class creation of a wiki devoted to educational technology, and the creation of a student selected, digital project (p. 119). A series of synchronous and asynchronous activities were designed by Couros to foster the creation of personal learning networks. Guest lecturers participated in twice-weekly synchronous meetings using Skype for audio conferencing and ustream.tv for video conferencing. One session each week was hands-on allowing participants to improve their technical expertise. Asynchronous activities included reading, sharing, editing, reviewing, and participating. A wide range of contributions created strong connections with individuals inside and outside the course.

Couros (2010) attempted to draw a distinction between the personal learning network (PLN) and the personal learning environment (PLE). His image of "the networked teacher" placed the educator at the center surrounded by all manner of technological devices. Arrows pointed at the teacher and at the device indicating the reciprocal nature of their use. The educator received information and knowledge from the device, but also disseminated information and knowledge to others connected to similar devices (p. 124). His final resolution to the differences between a PLN and a PLE were that a PLE was the "tools, artifacts, processes, and physical connections that allow the learner to control and manage their learning." The PLN is the "human connection" that is facilitated through the PLE (p. 125). The success of this course led to the development and implementation of the first Massive Open Online Course (MOOC) titled "Connectivism and Connective Knowledge" lead by Siemens and Downes (p. 110). The

power of the personal learning network was supported as a vehicle for learning and building knowledge through a connected community.

The studies above support Siemens's emphasis on the power of diversity, autonomy, interactivity, and openness to create personal learning networks through digital connections. Supporting the ability of at-risk high school to employ successfully social networks for both formal and informal learning opportunities may prove to be a practical solution to strengthen the motivation of students to remain in school. Ascertaining the appropriate and effective use of social networking and personal learning networks begins with Bingham and Conner's theory of engagement and social learning.

Bingham and Conner's Theory of Engagement and Social Learning

Bingham and Conner's (2010) theory of engagement and social learning found people learn best with and through other people. The theorists felt social media unlocked the potential for this type of dynamic and inclusive exchange addressing the need to bring widely dispersed groups together, allow access to subject matter experts, differentiate content based on learner needs, and reach across a wide body of individuals regardless of age. Social media allowed for more personal connections and learning was accelerated, when partnered with powerful technology tailored to fit the user. Social learning knowledge is quickly and easily acquired allowing the learner to adapt to new situations and learning requirements. Bingham and Conner felt social learning "transcended" social media by offering additional data, wider distribution of information, and an open network of "communicators and collaborators" (p. 8).

The theory of social learning is supported by a number of elements. Community provides a sense of sharing, caring, and accomplishment through working together toward a common goal. The use of free, high-speed video offers the ability to engage learners for short periods of time while providing a stronger vision than traditional print based media. Microsharing, where text messaging, links, or media are shared in quick blasts, can provide information for a just-in-time learning environment. Collaborative environments allow learning, data gathering, and cooperation in the sharing of information between and among groups. Virtual immersive environments include virtual worlds, 3-D learning environments, gaming, and simulations. While still in their infancy, Bingham and Conner (2010) felt the reality of the experience in virtual immersive environments coupled with safety and improved performance outweighed the expense. The authors found social learning changed the face of the typical conference where lecturers used social media to create a virtual dialogue with their audience running concurrently with the face-to-face meeting. Bingham and Conner recommended carving out time to have lunch with a colleague at the conference as well. Face-to-face interactions still carry strong emotional attachments.

Bingham and Conner (2010) attempted to determine if the subjects had basic knowledge to draw upon when presented with new information or situations, were able to complete basic tasks like solving problems using mathematics, conduct research, or operate a computer, and were able to relate to other people appropriately. Ethics, social mores, and the history of society were explored. Questions about the best sources for gaining knowledge and how they accessed information were asked. Other areas of

interest included the ability to innovate, draw from previous experiences, organize, manipulate, evaluate, and draw conclusions creating their own knowledge base that could be shared with others. A snapshot of the technology identity for the participants in this study provided insight into their ability to use informal learning, social networking, and personal learning networks to create learning opportunities leading to success in the educational world. Current research demonstrates that the development of a technology identity and perspectives about educational opportunities are influenced by use of social networking and the formation of personal learning networks (Goode, 2010, p. 501).

Allen, Naughton, and Ellis (2011) explained the results of a study commissioned by the American Society for Training and Development (ASTD) and the Institute for Corporate Productivity (i4cp) using Bingham and Conner's (2010) theory of engagement and social learning. The study explored the knowledge base required of educational professionals working with businesses to determine how they might achieve success implementing social networking within formal learning. Using survey information gathered from business professionals involved in a range of occupations and workplaces, Allen et al. found social media was already employed for professional development opportunities through the use of informal learning techniques. Eighty percent of respondents felt social media should be used more often. Incorporating social media to facilitate rapid and integrated learning that occurred seamlessly throughout the workday was found to be a highly effective solution (p. 51). Social media tools allowed businesses to maintain their corporate knowledge base, facilitate smooth job transitions, use collaboration to find solutions, and provide "an integrated and holistic approach to

developing employees" (p. 52). Fifty percent of the educational professionals involved in the study indicated social learning was "important" or "extremely important" in their current teaching model. Seventy percent indicated it would be "important" or "extremely important" for them in the next three years (p. 53).

Benefits of the incorporation of social media tools included flexibility, learner control of content, and synchronous communication. Learning occurred formally and informally. Learners demonstrated a significant level of engagement in the learning process (p. 53). The survey revealed three key themes. The first theme was best practices related to the inclusion of social media for learning. Primarily social media assisted in the creation of a collaborative network focused on information sharing and communication for all contributors: educators, learners, outside participants, and subject matter experts. Educational professionals guided network activities to assure all participants were learning and achieving. The second theme was gaining confidence with social networking tools. Currently social media tools tend to have a singular functionality. As social media evolves and is incorporated into learning management systems, the ability for seamless integration into learning models will render it unnecessary to use them individually. The third theme was strategies to surmount resistance to collaborative learning. The term social when related to social networking or social learning carried the stigma of being a waste of time rather than a learning opportunity. Security, privacy, intellectual capital, and inappropriate communication are also considerations that must be addressed.

Corporate culture, security policies, and corporate authority may dictate learning strategies other than social networking (pp. 54-55). Educational professionals must

address each of these themes through focus groups, collaboration with the legal and information technology departments, and dynamic management of social networks (p. 55). While this article related to business practices, the findings suggested the use of social networking with at-risk high school students from all described groups will enhance their perceptions about formal and informal learning. Identifying methods to support positive perceptions about education in formal and informal settings was one of the goals of my study.

King (2011) explored how a graduate student employed Twitter and a variety of blogs to engage in informal learning. Through an analysis of the student's postings, journal entries, and recordings, King was able to discern the level of professional development achieved and the "transformative learning" that occurred (p. 40). The participant, a woman King identified as "Patty," focused her educational efforts on the study of a particular mental health disorder after losing her employment due to the financial crisis of 2008. She created an informal personal learning community initially through interactions with blogs and later through activity on Twitter and Facebook. The members of her personal learning network included licensed professionals, learners like Patty, and individuals who were experiencing the mental health disorder in question (p. 41).

The research was conducted over a 14-month period. The community participated through both public and private spaces within blogs, Twitter, and Facebook. Groups overlapped to a slight extent and were continually expanding to include more members. Four benefits from the interactions and participation included: (a) access to primary

source information; (b) shared personal experiences; (c) using primary source information and personal experiences to frame new learning; and (d) gaining understanding from a variety of cultural perspectives. King (2011) created two categories for the benefits Patty gained: "essential additional skills development" and "professional identity development" (p. 42). King found Patty's learning in the area of professional identity development provided a "situated learning experience" not typically found in graduate school and allowed interaction to occur anytime, anyplace. The essential additional skills development added substantially to the level of expert understanding and performance (p. 42).

This case study demonstrated Siemens's (2006) connectivism concepts of diversity, autonomy, interactivity, and openness as it cited Bingham and Conner's (2010) theory of engagement and social learning. The research demonstrated that informal, personal learning networks established through individual choice can be effective modes to promote substantive learning. Personal learning networks coupled with social media could be used in support of internships and practice spaces to provide situated learning opportunities for the at-risk population of students who are the subject of my research.

Mancuso, Chlup, and McWhorter (2010) worked with adult learners in the virtual world Second Life to determine the "enablers and barriers" to learning (p. 681). The researchers postulated that once these two criteria were identified more effective virtual learning environments could be developed targeted for the success of adult learners. Within the context of human resource development (HRD), the concept of virtual human resource development (VHRD) offered a hybrid venue for formal and informal learning.

Adult learning within a VHRD environment included skill development, personal learning networks, and social networking (p. 682). Data were gathered using questionnaires, interviews conducted within Second Life, and observation within Second Life. Four barriers and six enablers to VHRD were identified.

The first enabler was to present "a variety of educational topics for life-long learning" (p. 688). Participants indicated they are able to interact with individuals from varied backgrounds and experiences allowing them to access a knowledge base not available to them outside the virtual world. "Opportunities for multidisciplinary collaboration" was the second enabler (p. 688). Teams of learners using Bingham and Conner's (2010) social learning theory were able to facilitate collaborations across disciplines. The third enabler was the ability to facilitate "collaboration across geographical boundaries" (p. 688). Second Life employed language conversion applications to eliminate the language barrier. Language and geography became insignificant enhancing collaboration. The "immersive environment" of Second Life facilitated the creation of a "social presence" that was the fourth enabler (p. 689). Constructing a technology identity through the creation of a personal avatar with facial expression and body movement allowed users to feel more "real" in the virtual world. Interactions with other users also felt more natural. The fifth enabler was "health and emotional benefits" (p. 689). Virtual relationships and activities provided a sense of well-being and a point of focus outside real world physical or emotional problems. Finally, there was a "cost savings over face-to-face experiences" (p. 690). Second Life reduced travel expenses and saved time for companies and the participants. The barriers to adult

learning in Second Life were technological glitches that created frustration, addictiveness of the platform, a steep learning curve when first entering the environment, and difficulties with expenses for land and structures for small businesses and nonprofits (pp. 690-692) .

Mancuso et al. (2010) demonstrated the effectiveness of a flexible timeline for learning and method of delivery. The flexible nature of Second Life allowed learning to occur anytime, anyplace, by anyone. The study also confirmed the virtual worlds allowed participants to

> (a) boost intellectual and emotional self-esteem effects through developing expertise through a sense of belonging to the virtual communities of practice and helping others; (b) connect their new learning obtained in the virtual learning environment with previous experience; (c) enable readiness to learn through trust and availability of supporting tools in the virtual learning environment; (d) link their learning orientation to situated or sociocultural context for a richer, more holistic understanding; and (e) employ the critical factor in determining successful learning through their motivation. (p. 693).

While Mancuso et al. chose an adult population already in the workforce as their focus, the findings have relevance for the at-risk high school populations in my study. Maintaining engagement with learning and creating opportunities for social learning through a platform like Second Life resulted in substantial learning gains for the participants. The findings of this study include additional support for Bingham and Conner's (2010) engagement and social learning theory.

The research supports the notion that, in order to determine the influences and perceptions for the populations of at-risk high school students participating in this study, motivation, connections, engagement, and social learning were crucial considerations. Reason dictated the need to explore the technology identity, social media, personal learning networks, informal learning, and formal learning using technology for this population. Further research in this area was justified and could close a gap in the literature published to date since no study has been found that addresses these problems specifically.

Technology Identity

> I could be anyone I might possibly want to be in the virtual world. Online anonymity provides the chance to set aside who we are and create who we want to be in the World Wide Web. The opportunity for deceit is rampant and has made me realize that everything online must be taken with a grain of salt.
>
> –Student excerpt (Luppicini & Lin, 2013, p. 185)

Goode (2010) provided the concept of a technology identity that was explored in this dissertation. For Goode technology identity was the individual's perspective about their technology skills, their access or lack of access to technology, their view of the significance of technology in their life, and their desire to place technology into their learning schema. These elements are blended into the individual's personal belief system (p. 498). Her approach to this topic guided the research for this next section.

Personal, individual, and social identities are critical components in a person's emotional wellness (Greenhow & Burton, 2011; Jin, 2013; Lawson and Lawson, 2013).

They defined personal and individual identity as an individual's past, present, and future. Identity was seen as being formed rather than something inherent (Greenhow & Robelia, 2009a, p. 123). Personal or individual identity was described as being taken from one's life story, the events within that story, and "social and institutional" contributions serving as the underpinning for the other three identities: social identity, role identity, and collective identity. The interaction between individual identity and educational institutions had significance to "how and why learning takes place" (Tynan & New, 2009, p. 305). Social identity was defined by a person's importance to and interactions with others (Owens et al., 2010). Learning takes place within a social context through these social interactions (Dunlap & Lowenthal, 2009, p. 130).

Reich (1991) recommended four critical skills for education; "abstraction, system thinking, experimentation, and collaboration" (p. 229). Hockly (2012) provided an updated list of complementary skills for digital literacy in education; "language, information, connections, and (re-)design" (p. 108). Hockly found digital identity was created within the context of connections literacy where the user sorted information and served as a "node" or hub for other individuals within the personal learning network. Role identity was found to be the position an individual holds in a social setting within a broader social framework. Role identity included the position a person might imagine themselves to have attained. Role theory and technology identity appeared to have close ties (Jahnke, 2012a). Collective, community, or group identity were found to be the sense of belonging a person derives from participation in group activities like social networking. Personal identity can be subjugated to the collective or group identity in

certain situations. Agreement within the group identity is highly valued but sometimes comes at the price of unrest and disagreement leading to a final consensus (Owens et al., 2010).

Technology identity was placed within the hierarchy of social identity. Individuals had many social identities or roles that were circumstance dependent (Bostrom & Sandberg, 2011). They established that the online or technology identity, which they termed the "exoself" (p. 4), for those under the age of 25, was one of continuous connectedness. These users will "never be alone, never lost, never forget" (p. 4). Greenhow and Robelia (2009a) described their identities as "You are who you type" (p. 124). Greenhow et al. (2009) used the term "multiple selves" to describe online learners who establish their virtual identities to solve complex emotional situations in a virtual world allowing them to be more productive academically (p. 252). Silseth and Arnseth (2011) preferred the expression "learning selves" where identity is situation dependent (p. 66). This group was described as completely dependent on the digital world for their validation of self with the ability to fabricate their identity to assure others will seek them through the Web and view them positively (boyd , 2007; boyd & Ellison, 2007; Taylor, 2011). boyd called this, "You are who you know" (p. 31) which resonates with Siemens's (2006) posit that the more connections we are able to make the more adaptable we become allowing us to create new connections and new adaptations (p. 73). Jin (2013) found the formation of digital identity, termed the "technoself" encouraged "self-motivation, self-expression, and self-development" (p. 461). Rodriguez (2013) used Maslow's (1943) "Theory of Human Motivation" in his description of how a technology

identity was formed, what Rodriguez called "discovering your tribe." Using Goggle+ Rodriguez described how circles could be formed with family and friends as well as groups who share common interests. The circles were shared with others and could be ranked by their importance to the owner or members of the circle. Lawson and Lawson (2013) found this type of connection created "cultural congruence" which created social and educational engagement while allowing the individual to establish a positive personal identity (p. 446).

Leander et al. (2010) studied Indian families that moved to the United States and had children who used social media to maintain connections and a sense of identity with their communities in India. While they did not revert to a complete Indian culture, they did not fully embrace the American culture (p. 368). Luppicini and Moir (2013) found using information and communication technologies (ICT) like Skype, Facetime, and instant messaging were helpful for maintaining a sense of relationship and connection particularly with familial groups at extended distances although the applications lacked the same level of intimacy provided by face-to-face communication. Participants relying heavily on ICT and social networking sites (SNS) expressed a feeling of communication overload, which led to fewer face-to-face connections (p. 150). Luppicini and Moir established students were using ICT and SNS to access educational opportunities, prepare for employment after school, connect with friends and classmates, and maintain a close relationship with family (p. 156). Luppicini and Myhill (2013) in their research about student values in a digital world discovered students placed significant importance on family connections (p. 137). Greenhow and Burton (2011) found their population of

teenage students between the ages of 13 and 17 spent time updating their profiles, looking for newer information from friends, accepting or declining friending requests, responding to messages, and creating new contacts (p. 238). The findings support Bostrom and Sandberg (2011), boyd (2007), Greenhow and Burton (2011), Greenhow et al. (2009), Jin (2013), Lawson and Lawson (2013), Leander et al. (2010), and Owens et al. (2010) and their research that personal, individual, and social identities are critical components in a person's emotional wellness.

Online connections fell into two groups: "friendship-driven and interest-driven" (Ito et al., 2010). Friendship-driven connections typically included relationships already established through face-to-face relationships and were comprised of social networking applications like Facebook, instant messaging, or playing online participatory video games. Activities might include "chatting or flirting; uploading, downloading, or discussing music, images, and video; updating profiles and writing on friends' walls; and playing or discussing games" (p. 122). Ito and her collaborative team found most of their study group did not go beyond the friendship-driven activities. Those participants who did pursue interest-driven activities were more imaginative, inquisitive, and willing to take risks. This group also used social media applications to communicate, play video games, and share digital media, but they were willing to extend their connections beyond their current face-to-face group. In this case the focus of their interest was the primary motivation to create the connections. DiSalvo, Crowley, and Norwood (2008) found using a digital game format provided a social context for learning to promote challenge. The participants engaged in "game talk" that allowed them to establish a game identity

for the purpose of bragging or annoying their competition (p. 136). Jin (2013) substantiated these findings in his work with Social Virtual Worlds.

Steinfield, Ellison, and Lampe (2008) used the terms "bridging social capital" and "bonding social capital" to differentiate between informal, informational networks and the relationship networks of family and friends. Their research focused on how Facebook was used to build bridging social capital among university students with low self-esteem. They found students who used Facebook greatly improved their bridging social capital and their self-esteem. Stronger bridges and self-esteem appeared to be created when Facebook use increased over time. The authors interpreted this as an indication of the growing importance of the social networking site to the students in the study. The visible connections "I can see who you know and you can see who I know" enhanced the social capital in both bridging and bonding networks (p. 442). Greenhow and Burton (2011) confirmed these findings in their work with low-income teens. They also used the term social capital and determined the importance of social networks to gain better access to and implementation of "information, influence, social credentials, and reinforcement of identity and recognition." In education Greenhow and Burton found social capital was tied to improved grade points, graduation rates, and attitudes toward education in general, including motivation and identity, two factors considered in this study (p. 226).

Dunn (2013), using the term "technoself," described four technological impacts on identity. He found a distinct difference between true identity and online identity. The online identity was either a replication or a persona of the user and was circumstance dependent. The identity could remain anonymous or be revealed. The identity could be

adapted to fit user preferences, which in turn had an effect on how the user conducted themselves online. He drew a strong distinction between identity and self-presentation particularly in cases where the user had physical or social disabilities (p.27). Luppicini and Barber (2013) supported these findings in their research on how university students compared their online and offline identities. They found 58% of participants described their online and offline identities as being different. Callaghan and Bower established similar findings (2012). Participants with similar personalities in both realms indicated they avoided anonymity to maintain a connection between the two identities (p. 166). Luppicini and Barber also found that relationships and interactions with an online audience sometimes led to positive changes for the offline identity.

Jin (2013) also used the term "technoself" to label the construction of a personality within "social virtual worlds" (SVW) (p. 457). Social Virtual Worlds allowed for interaction that was more similar to face-to-face communication. Emotions, facial expressions, and body language were critical elements for effective communication particularly in a three-dimensional SVW environment supporting large numbers of participants simultaneously (p. 462). Luppicini (2013) also adapted the term technoself in his research into the changing nature of online and offline identity, Technoself Studies (TSS).

Lowenthal (2010) focused on the concept of social presence and its relationship to virtual learning. He described social presence to refine the meaning and create distinctions from "social interaction, immediacy, emotion, and/or connectedness" (p. 2). He also sought to demonstrate the differences between social presence in an educational

setting and social presence in a business setting. In the educational setting Lowenthal studied online classrooms and found learners and educators created a social presence even in a text based classroom constructing connections and presenting an identity that felt authentic to all parties. When the focus was applied to the learner, rather than the method of learning, satisfaction, communities of learners, and learning all increased substantially. While one definition of social presence does not yet exist, Lowenthal included the terms connection, communication, being present, real, and "interpersonal emotional connection," to help bring greater clarity to the term (p. 15-16). Lowenthal and Dunlap (2010) applied the concept of social presence to establish communities of inquiry (COI) using digital storytelling. The stories, usually visual and audio interpretations, created connections through their personal and common experiences. When applied to online learning experiences, professors used applications like VoiceThread, Animoto, or PhotoStory to construct a social presence to create trust, connection, and a sense of community (p. 72). Dunlap and Lowenthal (2009) used Twitter to explore how social presence could be enhanced through "just-in-time" communication to aid in student satisfaction when paired with a face-to-face learning environment (p. 129). The Twitter interface allowed students and professors to achieve a level of immediacy creating a significantly higher level of social connection or presence and helping both groups establish a technology identity.

Mainsah (2011) initially described technology identities formed by immigrant youth between the ages of 16 and 20 in Norway as "fluid and hybrid" while being defined by their country of origin and framed by the Norwegian culture and social boundaries. At

the conclusion of his research he postulated technology identity formation is not as "fluid or flexible" as previously thought (p. 190). Jin (2013) refuted this finding and used the term "liquid identity" to describe the ability to create new virtual identities at will. Dunn (2013) supported Jin's finding of a fluid and flexible identity through research in the area of communication where users in online communities established an identity that could be changed as desired (p. 27).

Ethnic, gender, and economic indicators were used as descriptors of technology identity (boyd, 2007; Greenhow et al., 2009; Greenhow, Walker, & Kim, 2009; Mainsah, 2011; Taylor, 2011). Few tied the technology identity to educational purposes (boyd, 2007; Luppicini & Lin, 2013; Nielsen & Borlund, 2011). Luppicini and Lin (2013) paired online persona with face-to-face collaboration. University students were asked to meet socially in an online classroom prior to the start of their face-to-face meetings. Postings were anonymous and participation was voluntary. The most common positive themes identified by the research were a sense of freedom, personal control, and the feeling of anonymity (p. 189). An exception to the need for freedom and anonymity was noted by Nielsen and Borlund (2011) in their work to identify how the public library system in Denmark could support high school students. The participants in their research sought out the library to find reinforcement for their learning while receiving assistance and guidance from librarians (p. 117). In these digital locales the researchers found a natural rhythm between construction and consumption within the creation of an online identity. Individuals used a feedback loop to define, edit, and redefine their online identities. The technology identity was purpose dependent and altered to fit the digital space or activity.

Luppicini and Barber (2013) confirmed the findings with their work comparing online and offline identities (p. 166). Luppicini and Lin (2013) noted their participants found face-to-face interactions were more conducive when trust was the primary requirement (p. 189).

boyd (2007) used the social networking site MySpace to determine how high school users, age 14 to 18, formed their technology identities, how the online identity varied from the offline identity, and how online communities were formed (p. 120). Her research found that in the digital world the online identity and all that it produces in terms of text or images could last forever; what she labeled persistence. The technology identity and all it produces could be searched to find specific words, thoughts, images, names, or places; what she labeled searchability. What was created in a digital format could be copied, altered, and reposted; what she labeled replicability. Finally, she found that participants did not always know who was viewing and understanding what had been produced; what she labeled invisible audiences (p. 127). These four factors: persistence, searchability, replicability, and invisible audiences, created a persona available to the what boyd called the "networked public" (p. 126). A networked public was described as one segment of the mediated public space. Social media facilitates a virtual gathering of the public within a public space or networked public. The four factors listed above created a distinction between the unmediated public and the networked public and how identities were formed and functioned within these private and public venues.

The creation of a technology identity that would allow at-risk students to create connections beyond their family and face-to-face relationships could lead to a broader

social context for their educational efforts. The research indicated the creation of an appropriate technology identity within an integrated format of social media and face-to-face interactions created a stronger connection to teachers and educational professionals, higher satisfaction with the learning process, increased motivation, and a stronger sense of identity outside the virtual world. This was an area explored in depth with the group of participants in this study and related directly to the first research question regarding the development of a technology identity using social media and the influence it has on at-risk high school students.

Greenhow et al. (2009) found that students saw themselves as contributors to the knowledge pool that is the Web (p. 251). The traditional classroom model of the teacher as the one authority was being challenged by the need for participation, sharing, feedback, and validation. Greenhow and Robelia (2009b) studied the effects of "nonacademic communicative literacies" (p. 1131) within the context of the academic world by investigating low-income, high school students, their technology identities, and use of social media. Their findings associated with technology identity for this particular group of students followed those of Bostrom and Sandberg (2011), boyd (2007), and Taylor (2011) where students took on a situational persona. In contrast Greenhow and Robelia (2009b) and Greenhow et al. (2009) found students used visual media extensively including digital photo albums, music, and video to demonstrate "mood, preferences, and affiliations" as well as a way to describe themselves (p. 1144). These site elements were updated frequently by the teens supporting Jin (2013) and Dunn's (2013) findings of a liquid or fluid identity. This group of students viewed their

technology identity as "social currency" in order to attract more visitors and potential virtual friends to their sites (p. 1150). There was as a desire for "recognition, imitation, admiration, and critique" (p. 1150).

Maranto and Barton (2010) studied the effects of social networking on high school populations relating cruising the Web to "cruisin" down the strip in a hot rod during the 1960's (p. 40). Both events involved the concepts of "freedom, entertainment, romance, sexual encounters, and status" (p. 40). A technology identity based on one's social network replaced the souped up jalopy as the new status symbol. Traditional venues for youth to establish their social identity included: "stable family relationships, regional or national culture, or physical hangouts," but did not carry the same level of importance they once held (Greenhow and Robelia, 2009a; Greenhow et al., 2009, p. 251). Former physical surroundings have been replaced with personal webpages, blogs, social networking sites, and other virtual settings.

Maranto and Barton (2010) used Facebook, a social networking site, as an example of how four skills are the foundation for all social networking sites: a virtual identity, a system, a virtual presence, and digital collaboration. First, a virtual identity was created forming the abstraction of the user. Next, the user discovered the ability to connect to a broad group of individuals with similar interests, the system. The user was allowed to experiment and modify their virtual presence and online space to fit individual needs and personalities. Finally, collaboration was the keystone for all social networking sites where the user communicates and shares with others. Silseth and Arnseth (2011) looked for "transfer," where thoughts, expertise, or actions were seen outside the

instructional model and the individual or "learning self" was the central focus (p. 66). Greenhow (2011), Greenhow and Robelia (2009a), and Jin (2013) found students were using social networking to put their 21st century skills into practice using openness, sharing, and peer review for educational purposes as well as personal creative projects (p. 139). Their findings matched The National Research Council's (2011) three categories of 21st century skills: cognitive, interpersonal, and intrapersonal (p. 42). Leander et al. (2010) considered the Internet and its use within the context of a virtual geography calling it a cyberplace as opposed to cyberspace since connectedness is often place dependent (p. 364). Like Maranto and Barton they used the street cruising analogy to describe social media sites and chat rooms.

The venues where young adults congregate have shifted from the movie theaters, drive-ins, and soda shops to a virtual world where social connections can dictate an individual's level of social importance. The cyberplace as described by Leander et al. (2010) could be used to support students in their educational endeavors through online tutoring, just-in-time interventions, virtual connections with parents, teachers, and support staff, and a stronger virtually connected group of peers to promote an appropriate technology identity within a personal learning network.

The origin of the term digital divide is thought to have begun with a policy report created by the Clinton administration's National Telecommunication and Information Administration (NTIA). The report titled "Falling Through the Net: A Survey of the "Have Nots" in Rural and Urban America" (NTIA, 1995) described the vast differences in access to technology, Internet connectivity in particular, within communities, across

the United States, and around the world. The American Recovery and Reinvestment Act of 2007 provided just over 7 billion dollars for broadband infrastructure and the initiative to include technology at all levels. The National Broadband Plan of 2010 sought to bring broadband access and use to businesses and community entities. Scholars have attempted to move the conversation from a focus on technology access to a better picture of how technology access and use is impacted by social and economic disparities (Goode, 2010, p. 500; Warschauer & Matuchniak, 2010, p. 183).

Goode (2010) formed a new path for future research through the examination of the circumstantial importance of the digital divide, how the digital divide affected individual experiences, and how these disparities had an impact on future learning opportunities. Her work provided a needed perspective in determining how the group of at-risk high school students in question viewed their "technological identity" (p. 501). McCarthey and Moje (2002) tied identity to literacy and learning by studying who influenced students, how they interrelate, how they respond, and how they gain knowledge. They found that allowing students to explore their "possible selves" and research ways to attain their goals and challenge the current view of their identity created the opportunity for personal growth (p. 229). Goode approached the issue in a study considering the idea of a technology identity where the individual's perspective about their technology skills, their access or lack of access to technology, their view of the significance of technology in their life, and their desire to place technology into their learning schema are blended into their personal belief system (p. 498). In contrast to previous studies where surveys provided a broad overview of the types of technology

deployed and the number of users, Goode (2010) placed a focus on the individual user in an attempt to determine how and how often technology was employed as well as the level of expertise within each defined demographic group of college students. Goode also found that schools and universities were doing little to remedy the problem of what she calls "the second-level digital divide" where groups of disadvantaged, low income, and female students come to college less technologically prepared (p. 499).

Bobkowski and Smith (2013) used the target age group of the proposed study, 18 to 23 year olds, to determine why 13 % of that population were "social media non-adopters" (p. 772). One-fifth of the non-adopters were high school dropouts (p. 776). Their research indicated reliance on parents or relatives for living arrangements and financial support, providing for an elderly parent, relative, or child as a caregiver, and a concentration on finding and maintaining a job as opposed to having a career to be the primary factors contributing to their non-adoption (p. 775). The majority of non-adopters had access to the Internet and a computer but did not use them to establish or maintain social connections. Bobkowski and Smith determined non-adoption was due to a deficit in the use of information rather than the inability to access technology, Goode's (2010) second-level digital divide. boyd (2007) characterized non-adopters as falling into two groups: "disenfranchised teens and conscientious objectors" (p. 121). The disenfranchised group followed the definition provided by Bobkowski and Smith. The conscientious objector group had four subgroups: protestors against large media, teenagers who obey parental wishes, "marginalized" teenagers, and teenagers who felt they were too cool to participate (p. 121). The participants in this study did not fall into

these categories. Determining their adoption or non-adoption status provided perspective about their technology identity and use of social media and personal learning networks.

Schaffhauser (2013) defined Goode's (2010) second-level digital divide as a "broadband divide" where educational levels, location, and ethnicity determined access to broadband Internet connections and supports the findings of Barbour (2013), Bobkowski and Smith (2013), and Goode. As educational institutions moved toward the use of rich, multimedia resources and interactivity, increased bandwidth and more robust broadband networks have become a necessity. In contrast, boyd (2007) found ethnicity and income played only a minor role in teenage access to social networking sites. A difference was found in how and when the sites were used which boyd termed a "participatory divide" rather than a digital divide or broadband divide (p. 120). Boonaert and Vettenburg (2011) supported the finding of a participatory divide with research demonstrating a division of use based on economic status. Eynon and Helsper (2011) demonstrated a relationship between cultural and family traditions that led to a lack of engagement with technology based on personal choice rather than income, access, technological prowess, or interest (p. 546). The participants in this study lived in an environment rich with technological assets and access pointing toward a participatory or second-level divide.

To determine the role of Internet access in high poverty areas Kaplan and Mossberger (2012) surveyed areas of Ohio. They attempted to find a connection between technology skills, neighborhood structures, and jobs. Their initial review of the literature found that according to the Current Population Report of 2003, 35% of jobs employing workers with a high school diploma or less required computer use. In contrast, 72% of

workers with more than a high school diploma used computers and the Web at work. They also found a significant correlation between technology skills and higher salaries, better benefits, and greater job choice even among those workers with less education (Kaplan & Mossberger, 2012, p. 96). Their study found just 20% of East Cleveland workers, and 26% of Youngstown, Ohio workers used the Web on the job. The statistics demonstrated a widening gap between users and non-users and perhaps a disparity of use based on locality.

Goode (2010) documented a widening technological gap through a review of statistics from the Pew Internet and American Life Project (2007) which found an inequality in digital resource distribution for low-income areas and people of color within the United States (p. 498). Pegrum (2010) described the "patchy" nature of technological literacy among 12 to 18 year olds warning that the digital divide could become one of literacy (p. 2). Warschauer and Matuchniak (2010) and Schaffhauser (2013) found the type of Internet connection; cable, digital subscriber line (DSL), or dial-up, was driven by income and level of education (p. 185). The connection also had an impact on the way in which the Web was used since dial-up connections were much slower when multimedia content was accessed. While the E-rate program provided Internet connectivity for low-income schools and libraries, connectivity in homes and businesses in high poverty areas continued to be significantly lower than in more affluent areas. In contrast, Mouza and Cavalier (2013) found when economically disadvantaged students were provided laptops in a 1:1 initiative they were quickly able to reach technology skill levels that correlated to those of the economically advantaged control group (p. 147).

Jargowsky (1997) and Wilson (1987) used their poverty theories to suggest high crime, drug use, low performing schools, high dropout rates, mental and physical stressors, higher than average prices for food and other necessities, fewer job opportunities in the neighborhood, and social isolation created additional burdens for the population living in impoverished areas. These burdens, particularly in the area of social isolation, translated to a separation from social networks that could have the potential to lead to better paying jobs. O'Cummings, Bardack, and Gonsoulin (2010) confirmed the findings in their work with individuals involved in the juvenile justice system.

Race and social class played a role in a digital or participatory divide, education stood center stage, with educated African American workers accessing the Web at work twice as often as their more poorly educated neighbors of any race (Bobkowski & Smith, 2013; Boonaert & Vettenburg, 2011; boyd, 2007; Kaplan & Mossberger, 2012; Ralph & Ralph, 2013). Age was also a significant factor with participants under 30 indicating a 25% greater use of technology in general and the Web specifically (p. 102). Graham (2010) found what he characterized as a "stratification system" founded on educational levels, age, ethnicity, and income mirroring the findings of boyd (2007, p. 121), Goode (2010, p. 499), Greenhow et al. (2009, p. 63), and Kaplan and Mossberger (2012, p. 985). Problematic educational backgrounds were indicated for the majority of digital non-adopters (Bobkowski & Smith, 2013). Their research demonstrated the connection between poor school attendance, social media, and technology acumen as well as social isolation. These were factors found in the participants in this study.

Greenhow et al. (2009), Warschauer (2002) and Warschauer and Matuchniak (2010) documented a disparity in how technology was employed in high-poverty schools as compared to more affluent schools where low-income students tended to use technology for remedial purposes and high income students were more likely to use technology to conduct research, examine data, create presentations using multimedia, and use technology to express their knowledge and understanding. Goode (2010) also found a disproportionately low number of females and students of color participating in technology programs. Schaffhauser (2013) documented a deficiency in basic technological skills like saving files, using a mouse and keyboard, and navigating the Web among community college students. The research established that basic computer skills learned in the supportive atmosphere of the community college lab did not translate well to working in the home setting where equipment and access was not standardized and could not be supported by the college.

Greenhow et al. (2009), Warschauer (2002, 2004) and Warschauer and Matuchniak (2010) found basic skills like reading had a direct effect on Web literacy, technology abilities, and technology identity. Students in low performing schools were negatively impacted for life by their poor grasp of the basics and relegated to spending their in-school computer time engaged in remediation activities (Goode, 2010, p.499). Low-income students typically worked on the computer in a one-to-one model while higher income students worked in "classroom communities of practice" or personal learning communities (p. 501). Molony (2004) found an individual's identity was intimately linked to those with whom they relate pointing to a need for social connection.

The lack of access or inability to utilize technology at home coupled with lower level use isolated from a community of practice during the school day left students with less confidence about their technology abilities, unwillingness to take risks in technology usage, and fewer virtual social connections. These factors negatively impacted their technology identity and ultimately their educational and occupational futures.

Kaplan and Mossberger (2012) made the case that while technology and the Internet have become ubiquitous in American society some areas have been left behind particularly in the previously heavily industrialized portions of the United States creating a technological divide and an ever poorer digital economy for the surveyed region. Graham (2010) found when aspects of technology were broadened to include information and communication technologies (ICT) like android or Apple phones, results were quite different from Kaplan's and Mossberger's computer based study. Graham drew a strong connection between ICT and the social characteristics derived from user attitudes about technology and the importance to daily life as well as the ability to draw status from their possession and use: technology identity. Warschauer (2004) found a "socialtechnical" connection to establish what users actually did with technology rather than simply looking at what technology they possessed (p. 989). Goode (2010) supported these findings as well with her definition of a "technological identity" (p. 501).

Rather than using the term digital divide, Graham (2010) preferred to label differences as digital inequality (p. 986). His findings indicated smartphone and tablet technologies had actually narrowed the divide, but access to high-speed networks had become the limiting factor coupled with user "perceptions, beliefs, and attitudes" (p.

987). Schaffhauser (2013) supported these findings but found smartphones were not adequate for work at the university level. Graham's work also provided a foundation for a discussion of personal learning networks, where users are establishing communities at a distance through social media, blogs, wikis, social websites, webpages, chat groups, and online communication applications, using smartphone technologies to maintain connections and create two way communications virtually. The users also established their status and fashion acumen through the type and model smartphone or tablet they possessed allowing them to appear more successful economically. Graham posited technology contained a social context equally as important as how technology was applied to daily living. Luppicini and Myhill (2013) established that learners in higher education required additional instruction that encouraged self-awareness allowing them to firmly establish an appropriate technology identity and adapt to rapid changes in the technological society (p. 143). While the majority of the research involved students at the university level, the individuals targeted in this study were affected by the issues created by the digital, broadband, participatory, literacy, geographical, and the second-level digital divide. Determining the exact nature of the divisions provided insight into the formation of their technology identity and their use of social media and personal learning networks and helped fill the gap in the research for participants identified in this study.

Technology identity has not garnered a broad awareness in the research. Social identity was used to establish a more complete view of technology identity and the role it played in virtual venues, within a social context, and the digital divide. The fluid nature of technology identity provided individuals a feeling of independence, control over their

decisions, and the ability to be anonymous when desired while creating connections to family, friends, virtual acquaintances, and personal learning networks. Social capital acquired through the use of these networks in an educational setting appeared to improve grades, graduation rates, and perceptions of the educational process (Greenhow & Burton, 2011, p. 226). Research did examine technology identity within the context of income and the proposed age group for participants in this study but did not discuss the possible influences on dropping out of school, the consideration of returning to the classroom, and students who dropped out but have returned.

Social Media and Technology Identity

The power of social media can be illustrated through Jayci Derby. At age 11 Jayci Derby went with her parents to lay a wreath on the grave of her grandfather in the Fort Sam Houston National Cemetery, San Antonio, Texas. As she walked through the cemetery on that December day she noticed most of the other graves did not have wreaths. She took on the task of finding a way to place a wreath on every grave. She used social media through her own website, a Twitter feed, Facebook page, blog site, personal visits, and letters to raise more than $18,000 in two years. She partnered with a national group, Wreaths Across America, to assure on December 14, National Wreaths Across America Day; all of the military heroes resting in the Fort Sam Houston National Cemetery were honored (Diaz, 2013, p. 2).

Applying Kolb's cycle (1984) to this event, Jayci had an experience that impacted her. She observed the graves without wreaths and reflected about what she could do to create a change. She decided to use social media coupled with traditional communication

practices to share her thinking. Her experiences led her to be included in other high profile events in San Antonio and to being awarded a $10,000 scholarship for college from a national department store chain. This is but a small example of the positive nature and impact of social media illustrating a dramatic shift toward informal learning with a lasting personal impact and a change in technology identity for Jayci and for the group she represents.

Project Tomorrow (Speak Up 2011, 2012), a nonprofit group providing consulting and research support for K-12 education, surveyed high school students about their personal use of social media. The categories included personal social networking sites, online discussion boards, online communities, and online chats, using web-based applications for collaborative writing, and to trigger alarms and notifications for organization purposes, creating and sharing video online, and participating in wikis or blogs with topics of interest. These categories guided the discussion of social media and the impact on technology identity.

Bingham and Conner (2010) defined social media as "a set of Internet-based technologies designed to be used by three or more people" (p. 6). Greenhow (2008) called it "participatory media" where Shirky's (2010) theory of the "cognitive surplus," defined by Greenhow as "collective mental energies of society," are being brought to bear in the creation of information, relationships, and skill sets (p. 187). Welch and Dooley (2013) supported the need for participation rather than interaction where participation requires conversation and contribution. Finley (2011) characterized social media as critical to learning and working and an integral part of adolescent identity.

Junco, Heibergert, and Loken (2011) demonstrated how social media could engage, motivate, and transform students into active learners (p. 119). Greenhow and Robelia (2009a), in their work with MySpace, found students were honest and open when creating their online identities with only slight exaggerations. The majority of their participants revealed their first and last names and other personal information, but kept certain data off the website like their birthday. Students used MySpace to create connections and receive feedback through blogs or messaging which in turn impacted the technology identity of the participants. Music, video, and images were all factors that contributed to technology identity formation. boyd and Ellison (2007) called the creation and maintenance of an online persona "impression management" and discovered personal profiles were rarely real.

In their studies of populations using social media Ferriter (2011), Lenhart, Purcell, Smith, and Zickuhr (2010) and Madden et al. (2013) found 61% of adults and 73% of teens who participated in online activities collaborated using social media. Greenhow and Burton (2011) found 76.9% of the teens from low-income families who participated in their study maintained a social presence taking 10 to 30 minutes daily to update and monitor their pages (p. 235). According to Facebook (2010) users spend over 500 billion minutes per month accessing their Facebook pages with an average use of 55 minutes per day. Alexa (2014), Compete (2014), Ferriter (2011), Hepburn (2010), and Weil (2010) quoted Twitter statistics of over 50 million tweets per day, an average of 600 tweets per second, with 145 million users. Bicen and Cavus (2012) in their work with undergraduate college students found the majority of Twitter traffic was conducted from a cell phone

and most users spent at least 4 hours a day engaged with Twitter (p. 337). YouTube claimed an average of 100 hours of new video posted every minute, over 6 billion hours of video watched each month, and 1 billion individual viewers each month (http://www.youtube.com/yt/press/statistics.html). These statistics validated that for some users social media has become a tool accessed on a regular basis. The statistics did not provide data about how the information gained from social media was applied to alter their technology identity or enhance their personal learning networks or if formal or informal learning had taken place.

Early technology adopters began using social software in the 1960's employing bulletin boards, Usenet, CompuServe, and discussion boards. Today the type and variety of social media tools are extensive beginning with the most popular, free versions; Facebook, Twitter, Skype, Delicious, PB wiki, Flickr, Google Apps, and YouTube and moving to enterprise platforms like WebSphere, Sharepoint, Netweaver, and Beehive (Dabbagh & Kitsantas, 2011, p. 7). Dabbagh and Kitsantas described social media as a conduit for "communication, collaboration, and creative expression" (p. 1) that included social bookmarking, blogging, mircoblogging, collaborative workspaces, media sharing, social networking sites, and web-based office tools. Rajagopal et al. (2012) labeled the conduit "communality" where new virtual relationships are created and altered based on the life stage of the individual (p. 3).

Jahnke (2012b) called social networking a "culture of participation" (p. 60) where virtual communities are formed and learning took place through virtual interactions. Learning was shifted from a traditional approach where students are consumers of

knowledge to an activity and relationship building approach. Lalonde (2012) labeled social networking collective knowledge. He advocated the use of Twitter, a mircoblogging application, as the ideal tool for creating collaborative networks. An examination of technology identity within social networking provided a glimpse of how the subject students applied Kolb's (1984) four-step cycle to their Web relationships.

Junco et al. (2011) used Twitter in combination with a Ning in a university setting to determine if this type of social media had an effect on student engagement and on grades. The age range was similar to the target group for this study, 17 to 20. The majority of the participants in the Junco et al. research were Caucasian. No African American students were included in the sample and only 5% were Hispanic (p. 121). Twitter was used as a supplement to class discussions, a way to make inquiries, an area to conduct book talks, a cue for due dates and upcoming activities, a support mechanism, a casual meeting space for students and professors, an organizational venue for volunteer efforts, and a tool to facilitate study groups. The researchers concluded using Twitter with appropriate educational strategies and practices was effective in increasing student engagement and had a positive effect on grades (p. 128). They also found Twitter caused professors to increase the amount of communication with students creating a stronger sense of connection for faculty and students; engagement. Roth and McCully (2010) supported the findings about the need for faculty to be more engaged through their work with Facebook and Twitter. They showed the necessity for staff development built around the use of social media tools to assure the applications were correctly brought into classroom practices.

Levine, Winkler, and Petersen (2010) employed social networking through a Ning to support students in a community college setting within a food services program to allow students, professors, and staff the ability to stay connected outside the classroom. The site provided classroom assignment information, syllabi and curricula, job opportunities, an area for resumes and vitas, as well as an informal space for users to support and encourage one another. Students participated in a ten-day program called Bridge Training "to enhance professional, academic, and personal development skills" (p. 76). Within the training they were taught to prepare a professional technology identity through the creation of their own webpage. Levine et al. found the professional identity created a sense of "accountability and responsibility" (p. 76). Subgroups were formed based on student interests and academic focus. The permanence of the Ning, it was designed to be a persistent networking entity to be used by students even after the class was completed, provided the motivation to actively participate in social networking endeavors at many levels. The permanence also created a greater level of responsibility for their online identity. Students were guided in their selection of photographs to include and how to create postings and responses that reflected a professional persona. The sites were used in the job application process something the participants in this study also required.

According to Dabbagh and Kitsantas (2011) the term Web 2.0 was being applied to other social media integration efforts like "e-learning 2.0, pedagogy 2.0, student 2.0, faculty 2.0, and classroom 2.0" (p. 2). These new iterations of a social media framework could be leading students to guide their own pathway to learning as Hilton (2009) and

Siemens (2005) explained. The community of learners becomes the curriculum leading to a more differentiated instructional model. Wegner, Smith, and Rowe (2005) defined a "cycle of inventiveness" that evolved within a community of learners to bring understanding to technology, select technology to fit a particular community need, and apply the technology to achieve community goals. When social media was used in combination with personal learning networks or what Bingham and Conner called (2010) "social learning," a virtual trail of breadcrumbs was formed documenting the learning experiences of the participants and allowing others to follow and consume the breadcrumb trail to enhance their own learning experience. Pikalek (2010) tied social media to user participation but added the suggestion that all content was user generated. The wide variety of Web 2.0 and social media tools provided both the pathway Hilton envisioned and the differentiation Siemens espoused. The subjects in this study defined their technology identity in part through the use of social media.

The research revealed the impact social media has on the development of a technology identity. It did not address how social media influences at-risk populations particularly in the age range of this study. There was significant data to support the need for combination or hybrid approaches using websites, microblogging, and face-to-face interactions to support educational efforts. This type of intervention appears to demonstrate positive outcomes.

Personal Learning Networks and Technology Identity

Senge and Kim (2013) described learning organizations, what are called personal learning networks in this study, as living entities having a structured organization,

information system, and culture able to learn from shared experiences to advance decision-making and competition. The foundation for their learning organization was the way an individual participated in substantive discourse that comprises reflection, openness, analysis, and improved common goals and interests. The community participated in a wide range of shared practices, values, and beliefs through mutual discussion. Social relationships were created to build effective learning environments (Lalonde, 2012). Technology identity was formed within the social identity. Within the context of the technology identity the individual must work autonomously and be self-motivated to contribute effectively within the learning community. The individual must also seek out and create connections with other people seeking answers to similar questions. Connections must be activated and maintained to continue the learning process (Rajagopal et al., 2012; Mislove, Marcon, Gummadi, Druschel, & Bhattacharjee, 2007).

Connections consisted of three different strengths: communality with strong connection, sociality with weak connections, and connectivity with very weak connections. All three strengths provided the opportunity for learning; however weak connections created a stronger environment where new information, understanding, and innovations were shared. The individuals in the sociality level were found to be more fluid moving in and out of a personal learning network as the topic of study dictated. Rajagopal et al. (2012) found networking for learning was a strategy that needed to be developed along with a perspective about learning that had to be nurtured. Individuals had to identify and be aware of the strengths and weaknesses of other members of the community. They had to place a value on the relationships those strengths and

weaknesses had with their own strong and weak points. This ability was a valuable asset in the creation of a technology identity.

Slotta and Najafi (2013) described the four basic aspects personal learning networks, what they called knowledge communities, have in common.

> (a) a collective epistemology where members understand learning in terms of growth or progress of their knowledge community; (b) development of a shared knowledge base, resulting from community discourse and practices; (c) pedagogical and technological scaffolds that facilitate inquiry activities that guide students' active engagement in community discourse and practices with the aim of advancing the community's knowledge. (p. 98)

Within the personal learning network or knowledge community, students will begin to find their place among the community of learners. They will recognize what needs to be learned, create a plan for learning, and assess their progress. Gunawardena et al. (2009) established a framework of six stages for creating a virtual PLN or social network within a wiki beginning with the content, and moving to "discourse, action, reflection, reorganization, and socially mediated metacognition" (p. 3). Identifying the stages allowed users to move easily through the creation of their personal learning network.

Afshar (2013) interviewed three university chief information officers (CIOs) who were ranked the most social CIOs in higher education by The Huffington Post. When asked why they spent time interacting with social media they unanimously replied it was because they were able to learn. One characterized social media as a "personalized learning network, a knowledge amplifier, and a curated newsfeed." With over 66% of all

young people using cellular devices and an average consumption of media of 7.5 hours daily, the participatory nature provided by ubiquitous multi-media devices allowed individuals to access information specific to their interests and contribute to virtual communities at a level described as conversational (Squire, 2013). The conversational nature of the interactions demonstrated a brisk and steady movement between the learners' objectives, the capabilities of the mobile device, and the social nature of the interaction.

Squire (2013) studied mobile technologies and their use as a social practice in the context of informal learning and personal learning networks (PLN). Squire and Dikkers (2012) applied social construction of technology (SCOT) as their theoretical framework to define the technology practices, purposes, and objectives of users as they place technologies in their schema and in their PLNs. This understanding went beyond what the technological devices could do and the special features they contained to explore how users applied those features to enhance their learning and establish their identity (p. 448).

Squire and Dikkers (2012) explored the use of mobile technologies, smartphones in particular, for educational purposes in a population similar to the one used for this study. Their findings indicated an average of 7.5 hours per day spent utilizing smartphone technologies with approximately 3.5 hours of that time spent multitasking incorporating additional technological devices (p. 446). The authors found a number of advantages for users and educators. Smartphones were not restricted to specific locations allowing the user to move freely and access information virtually anywhere. Social connectivity using Facetime or Skype technologies allowed for face-to-face interactions. Location specific

information was easily collected and shared within the PLN. Devices could be connected to other devices and networks that allowed for shared environments. Individuals could access a variety of knowledge support tools to create a specialized learning path unique to the user (p. 447). Each of these features allowed the individual to tailor learning to their technology identity and customize their experience.

Squire and Dikkers (2012) found younger users naturally customize their digital devices for the highest level of enjoyment when using them for entertainment purposes. This study examined the use of mobile technologies in an educational setting as well as outside the classroom. Four iPhones were purchased and participants between the ages of 8 and 18 were recruited. The two youngest participants, aged 8 and 11, were the researchers' children allowing the researchers to observe them often and question how the phones were used in their homeschooling activities. The second and third groups of students were between the ages of 15 and 18. These groups attended local high schools. Six parents and two teachers were also interviewed. The main emphasis of the interviews was to garner the stories the participants had to tell about how they used the phone to create an identity, what motivated the students, and how they used the iPhone to overcome obstacles to learning.

These discussions led the authors to create the metaphor "amplification of learning" where "interest, self, social networks, and learning" were all amplified through the use of the mobile device (p. 451). Their findings indicated students downloaded an average of 23 applications in the three-week period of each study. Fifty percent of the applications were strictly for entertainment purposes. The remaining 50% were virtual

tools, learning applications, or social networking applications. Students reported feeling empowered and helpful when using the devices. They were able to be self-sufficient, independent, confident, and able to solve problems they encountered in everyday life.

Ito et al. (2008) found mobile technologies not only put the owners in charge of their own learning, but the devices also allowed the users to alter their surroundings using "cocooning, camping, and footprinting" (p. 16). Ito et al. described cocooning as the creation of a barrier between the user and the world around the user. Headphone or earbud use is an example of cocooning. Camping entailed the use of mobile devices in areas accessed by the public like shopping malls, restaurants and bookstores. Footprinting was the use of mobile devices to record and track daily activities to be shared with members of the PLN or other social media. These findings provided more support for the empowerment mobile devices convey to their users.

Greenhow and Li (2013) explored the use of a Ning called Remix World created by Digital Youth Network (DYN). Students from three charter schools in grades 6 to 12 participated in the creation of unique and individual media that was posted to the site to bring attention to their work and create a connection between formal and informal learning. Students created an online profile, reviewed and critiqued other postings, connected with peers, experts, and mentors, and shared new techniques and applications. Postings took the form of text, audio recordings, or visual representations. The feedback provided by mentors and peers created a collaborative network fundamental to the success of the program and the motivation of users to continue making contributions. Users found Remix World facilitated the formation of a public identity within the

collaborative group and strengthened their ability to communicate effectively, from learning networks in the informal realm that had formal educational impacts, and participate in peer review and critique (p. 134).

Levine et al. (2010) used a Ning with their community college food service students. They found the formation of a professional technology identity within what they called a community of learners allowed the users to remain connected even after their coursework was completed. Beglau et al. (2011) supported this finding in their research with teachers engaged in professional development using a PLN. Levine et al. had used digital storytelling and e-portfolios previously with limited success. The Ning proved to be a highly effective vehicle for creating professional technology identities for their students as well as establishing a professional learning community that persisted beyond the scope of the educational institution. Employment opportunities posted on the Ning led to 50% of the students finding work immediately following the completion of the program (p. 78). The dropout rate in the year prior to this research was 36%. The dropout rate fell to 12% during the year the Ning was utilized (p. 79). The personal learning networks created and maintained allowed students to present a professional face to prospective employers. The participants in the proposed study might also benefit from support maintained through personal learning networks that connect to formal educational opportunities.

Lang (2012) encountered a great deal of resistance to the use of Facebook as a formal learning tool in the formation of learning communities. Rather than forming a connection between faculty and students, Lang established a peer-mentoring program

where the peer mentors had regular contact with a faculty member acting as the project manager. Peer mentors were provided directions for posting discussions, answering questions, and acting as the group leader. Two types of communication within Facebook were most prevalent; (a) chatting and joking to create human connection and (b) acquiring guidance and information. Lang found relationships were critical to creating the context in which learning can take place within a social network like Facebook (p. 125). Cultures of participation had to be formed to create a sense of investment into the online community and prevent what Lang called swooping in. Swooping in occurred when participants accessed the site only to ask questions and did not make contributions to discussions or participate actively.

Fischer (2011), in support of Siemens's (2006) theories on knowledge acquisition and connectivism, described cultures of participation as shifting students from being consumers of learning to creators of knowledge who engaged in innovative design, adoption, and adaptation of technologies to their needs and in collaborative knowledge construction (Fischer, 2011, p. 42). The individuals' identity was viewed as their value and effort given to the group. Participants needed to feel their work had meaning and that the return they received for their efforts validated the endeavor. The connections within the PLN were stronger and the swooping in issue did not occur.

Lalonde (2012) studied educators from K-12 and higher education to discover how they employed Twitter in their personal learning networks. Participants felt the immediate, continuous, and unstructured ability to have a virtual conversation and connection made Twitter a crucial asset to the personal learning community. A level of

anonymity was available allowing learning by observation. Large groups made the network more valuable and useful. Ideas could be shared and distributed to the group particularly when it was paired with a blog. Participants in this study used the blog and Twitter to "amplify" information motivating other members to contribute, retweet, or blog. The more tweets and posts were amplified, the more feedback received, the more motivation for tweeting and blogging.

Warlick (2009) used a growing analogy in his writing on personal learning networks (PLN). He posited that, "Technology has inspired a shift from a hunting-and-gathering information economy to the domestication of the information landscape" (p. 13). Within the wide variety of PLNs Warlick found three types. Synchronous connections created and sustained by the user through applications like Skype, iChat, and uStream to conduct real time conversations. "Semisynchronous" connections created through applications like Twitter, Facebook, Google Docs, and text messaging to conduct conversations that are not quite real time. Finally, asynchronous connections created using active tools for information gathering like real simple syndication aggregators (RSS). Instead of having to search for information, the information is directed to the user (p. 14). The technology identity of the individual within each PLN type became an "amplifier" of knowledge through reflection, connection, and reconnection.

Lewis and Rush (2013) defined communities of practice as "a group of practitioners who interact with each other to share their expertise about some aspect of their practice" (p. 2). Wenger et al. (2005) placed a technology focus on the definition through an exploration of how technology tools could be employed in support of a variety

of communities. Gunawardena et al. (2009) used Wegner et al. (2005) to define the method where discourse is formed or "negotiated" to create meaning. Gunawardena et al. discovered the knitting together of identity and power within their wiki could be easily discerned through an analysis of the conversations and actions using language. Participation in the wiki helped form the technology identity and the technology identity had an effect on participation.

Newgarden (2009) found one issue with a community of practice (CoP), the individual may have lost a sense of self in the process of becoming a member of the community. Individual identity took on the customs, traditions, and motivations of the classroom or school rather than retaining the unique qualities of the contributing member (p. 3). Identity was negotiated within the PLN. The abrogation of individual identity could affect the perceptions regarding the use of informal PLNs as a mode to enhance and support formal learning. Wenger et al. (2005) suggested caution in the definition of technology identity stressing the individual member in a PLN rather than placing an emphasis a balance between the community and the individual. Social media was designed for communities of practice but "experienced by individuals" (p. 10).

Figg et al. (2010) explored a population of students similar to those in this study. They designed an online community using an application similar to Facebook to provide virtual mentoring and tutoring for students at-risk of dropping out of high school. The Mentor Connector Program worked with students Monday to Thursday. Pre-service teachers were matched with students who met the criteria for the program. A subject-matter expert was available to provide guidance and direction. Students used grade

appropriate chat room spaces while mentors had a blogging area to ask questions and support other mentors. Anonymity facilitated open exchange and the "strength of weak ties" (p. 479). Three student themes were revealed by an analysis of the data. Students appreciated the ability to receive help with homework. Access to help within specific subject areas was also cited as a benefit. Finally, students enjoyed chatting with their mentors online asking questions about their lives at the university creating personal connections with persons in their age range. Statistical information about the numbers of student remaining in school after the intervention was not provided.

Students working within a technologically mediated personal learning network were able to be self-sufficient, independent, confident, and able to solve problems they encountered in everyday life. Combining mobile applications like Twitter with computer applications like a blog, Ning, or Facebook allowed for continuous support, personal connection, and the amplification of knowledge. While high school students were the focus of several of the studies none of them addressed the at-risk population proposed for this study establishing the need for further research.

Informal Learning

The theory of informal learning was first described in research by Marsick and Watkins (2001) and was based on the work of Dewey (1938) and Lewin (1946). Informal learning is known by a number of associated terms: self-directed learning, self-determined learning, transformative learning, flexible learning, experiential learning, situated cognition, incidental learning, unplanned learning, communities of practice, and cultures of participation (Fischer, 2011). Jahnke (2012a) described the three types of

learning as formal, non-formal, and informal and applied three factors including the extent of organization, certifications, and who causes the learning to take place, what she calls "the learning trigger" (p. 61). Jahnke (2010) established four distinct differences within the online communities: group size, content, length of the group connection, and the method used to create contact. In contrast to formal and non-formal learning, the informal learning process is conducted outside a classroom or other structured educational area and the learner is in control of the methods, content, and rate of acquisition. Informal learning is not graded or assessed by anyone except the individual or the members of a personal learning network (PLN) (Jin, 2013, p. 465; Lalonde, 2011, p. 12).

Kolb (1984) described experiential learning, a close relative of informal learning, as a cycle with four steps. The first step is an experience that impacts the learner. Next, the learner makes observations and reflects on the experience. Based on this reflective process the learner comes to conclusions and "forms abstract concepts" (p. 3). Finally, the learner applies the theory to new experiences. This early description of informal learning has been enhanced by the use of social media and electronic resources where a question is asked, an android or Apple device is retrieved from a pocket, letters are swiped or typed on the screen, and answers appear to be analyzed and shared (Mouza & Lavigne, 2013). Those involved may not even realize learning has occurred. Richardson (2012) called this process the "culture of customization" (p. 22) where the user chooses music with digital resources like Rhapsody, Pandora, or iTunes, reads using a Kindle or Nook, searches using Google, Yahoo, Metacrawler, or Bing, and watches movies or

television through Netflix, Hulu, ChromeCast, or Amazon. Jahnke (2012b) found users in this informal setting establish their own pace, subject, and framework by determining what, how, when, where, and with whom the learning will take place (p. 60). Providing students with the understanding of how to access personal learning networks and develop their informal learning opportunities digitally could unleash powerful educational forces while simultaneously altering their "technology identity" (Goode, 2010, p. 507-508).

The learner in an informal setting is motivated intrinsically pursuing knowledge for his or her own personal gain. Learning takes place via a bottom up approach using new information to inform and alter perceptions (Lavigne & Mouza, 2013). Often the information is negotiated between the members of the personal learning network, allowing the group to experiment with less risk to the individual members, pursue personal interests, and follow topics holding a high level of importance to the group or an individual. Jahnke (2012a) called it "learning what, learning how, learning when, learning where, and learning with whom" (p. 395) in her description of the many options available within the context of informal learning. Tay and Allen (2011) described the process as a movement from "not what to know, but how to know" supporting Siemens's (2006) theories of knowledge acquisition and constructivism (Tay & Allen, 2011, p. 154). Baird and Fisher (2006) explained the process using the term andragogy. Andragogy shifts the student from being a receptor of information into a creator of understanding of information with particular meaning for the learner; self-directed learning. Blaschke (2012) argued andragogy might not be adequate in preparing students for the world of work. She posited heutagogy, where the learner is "self-determined," particularly within

the context of social media, could be the appropriate pedagogical approach for education in the future (p. 56). Placing the student at the center of the learning experience characterizes the informal nature of the personal learning network (Jin, 2013). Formal learning comprises about 19% of kindergarten to 12th grade learning, 8% in undergraduate school, and 5% for postgraduate education (Banks et al., 2007). Current estimates find that between 65% and 90% of all learning takes place as an informal activity (p. 2). Blanketship (2011) found that 80% of the one thousand colleges he surveyed used social media and over 50% use social media as a part of their classroom practice (p. 40).

In contrast to informal learning, formal learning is conducted in a structured educational environment; usually in a classroom in a bricks and mortar building, a virtual venue, or both. The learner is typically a part of a controlled group of other students following a prescribed curriculum set by the educator or educators in charge. A timeline is established to assure all the information is covered within a set period of time and assessments are given to assure learning has taken place. Grades, diplomas, and degrees are awarded as a result of participation in a formal learning structure (Dabbagh & Kitsantas, 2012). Slowly the educational system is moving away from this regimented, formal learning process toward a more informal, mixed methods, or non-formal process that may come to rely heavily on the personal learning networks described above. Social media is having a noticeable impact on the current formal educational structure. Jahnke (2010, 2012a) described collaboration using social media as a method of connecting formal and informal learning creating a "culture of participation" where virtual

communities are formed and learning took place through virtual interactions (p. 3, p. 60). Bringing social media into the classroom could allow for the virtual "communities of practice" as described by Goode (2010, p. 499).

Demski (2009) found this type of hybrid approach effective for teaching staff needing professional development when applied in video format with supporting documentation (p. 18). A week after viewing a particular video, participants received additional questions about the material through email. Based on responses, supporting resources were provided by technology coaches and mentors. Face-to-face meetings and observations took place every two weeks. Flexible groups were formed as needed to continue and improve professional practices. A learning management system (LMS) was employed to track teacher progress and success. Chen and Bryer (2012) and Ralph and Ralph (2013) verified that a variety of social media tools like Facebook and LinkedIn were effective when used by educational professionals. While these studies contained an older population, it is possible a similar scenario could be applied to the target group of young adults in this research.

A qualitative study by Moje, Overby, Tysvaer, and Morris (2008) explored 8 to 18 year olds to determine their digital habits as they applied to reading and how what they read online influenced their learning. Their study closely parallels research conducted by Greenhow (2008) where a similar age group of students were investigated to determine if reading online in an informal setting impacted traditional reading skills (p. 188). Moje et al. found that informal, web-based reading motivates students to continue research, write, alter text, alter outcomes, compare, contrast, comment, and question. In

addition, it was found that this type of reading helped students obtain skills needed for occupational futures in digital industry (p. 108). O'Cummings et al. (2010) found that individuals in the juvenile justice system were less likely to reoffend if they learned to read or earned a General Equivalency Diploma (GED) while they are incarcerated. Lavigne and Mouza (2013) support this finding through their research into 21st century skills and the need for workers to "innovate, solve problems, and collaborate (p. 271).

Tay and Allen (2011) found a similar connection between the manipulation of content and deeper learning. Their work revealed that having students read and edit the work of their peers had a positive impact on the learning process. Ralph and Ralph (2013) established that Pinterest, an electronic bulletin board where users can "pin" their favorite web-based illustrations, was of particular value to visual learners. In contrast Pegrum (2010) found vital knowledge required to translate informal, online, social, or gaming experiences into educational and workplace skills was not being acquired by the majority of students documented in his research.

Moje et al. (2008) established that digital reading skills, an example of informal learning, were not formally taught nor assessed in the classroom. The authors contended there was a mismatch between the way content was evaluated in the classroom setting with little to no emphasis on the evaluation of informal, digital reading skills learned outside the classroom (p. 4). The research demonstrated the ability to read and comprehend content within formal and informal settings was closely tied to the learning process. While informal, digital, reading skills were not evaluated as a part of this study, an evaluation of informal learning revealed a weakness in this area.

Jahnke's (2012a) exploration of the marriage between informal and formal learning using an online forum for university students and faculty focused on the "conation of learning," or concrete actions of learning (p. 395). Role theory, the study of the relationship between "an individual and society" or "a person and the system" was used to frame the research (p. 399). The purpose of the online forum in Jahnke's (2012a) research was to provide a single location for questions about classes, notes and other in-class information, tutorials, collaborative homework completion, test preparation, and personal support. In her evaluation of the results Jahnke divided the online forum into three groups based on their use of the website: the core group, registered lurkers, and peripheral members. There was also a frequent visitor but not registered group that was not a factor in her study. The implications of Jahnke's findings show that active learners are not just actively posting and writing, they are also actively reading.

The active reader/learner can fall into the registered lurker or peripheral member groups and may be learning equally as much as the core group while remaining invisible. Many times these groups did not actively participate because their questions were already answered in the forum. Ninety-two percent of the users found the site useful and 94% stated they recommended the forum to friends or colleagues. The forum allowed the students to have their questions answered at any time without the penalty of feeling less informed than other participants. It also allowed them to voice their concerns or frustrations anonymously without apprehension of reprisals from a professor (2010, 2012a, p. 400).

Tay and Allen (2011) found a level of anonymity was helpful in their work with students editing and assessing their peers. boyd and Ellison (2007), Herbert (2012), Luppicini and Barber (2013) and Luppicini and Lin (2013) discovered anonymity had positives and negatives. The positives included freedom of expression and thought and the possibility to overcome social awkwardness and timidity. The negatives included mistrust, skepticism, caution, and irresponsible behavior. Luppicini and Barber, and Luppicini and Lin suggested the use of identity anonymous spaces within online educational venues to increase motivation, self-directed learning, diversity, and multicultural education (p. 167 and p. 193). Jahnke (2012a) established that sense of community in the forum triggered the conative level of learning potentially changing the behavior of the learner, a learning outcome where actions are practiced and put into use through product or reflection (p. 400). Ralph and Ralph (2013) demonstrated similar findings in their work with Pinterest. Luppicini and Myhill (2013) established that learners in higher education are not presented sufficient opportunities for self-directed learning, responsibility, autonomy, reflexivity, and reflection (p. 143). Dabbagh and Kitsantas (2012) found personal learning environments (PLE) to be the appropriate venue for the amalgamation of formal and informal learning. The research provided a rationale for why anonymity might be a positive event even within formal learning spaces. An anonymous technology identity within the personal learning network was a topic that was explored within the participants in this study.

Yu et al. (2010) corroborated that social media, in this case Facebook, had positive effects on their studied population. Through the use of face-to-face discussions

and surveys, they determined how Facebook impacted the lives of university students. Their findings indicated social networking provided both an educational and psychological benefit through peer relationships and growing into the university culture which in turn increased "cognitive and skill-based learning" (p. 1500). Like Jahnke (2012a), Yu et al. found the need for anonymity to prevent embarrassment when posing questions. Tremblay (2010) suggested anonymity was beneficial when using cell phones as audience response systems and the goal was an overall picture of knowledge rather than knowledge based on individual responses. Jin (2013) found many participants in Social Virtual Worlds preferred to remain anonymous. Arnold and Paulus (2010) commented on the positive effects of lurking where their research participants read posts from classmates but declined to respond. The instructor could not see the interactions between specific students by actual name but "community building and modeling" was verified through their research, which the authors asserted supported knowledge building (p. 194).

Cain and Policastri (2011) detailed a similar finding where female students participated twice as often as male students but both genders displayed similar understanding and knowledge of information. Laat and Schreurs (2013) noted informal learning can be unplanned and is often unseen. Blanketship (2011) found Second Life, a virtual world where avatars are used to communicate and interact, allowed students to be more open and participate more fully. Yu et al. (2010) made the suggestion that their model could be used in a virtual peer-mentoring or peer-coaching model similar to the proposals in this study. Figg et al. (2010) found virtual mentoring for at-risk youth

provided "psychological and emotional support to foster behavioral and attitudinal changes" while allowing for more frequent contact (p. 479).

DiSalvo et al. (2008) observed the use of informal learning activities provided through digital games using console systems like the Xbox and PlayStation 2. They studied a population of economically disadvantaged, African American, middle school students between the ages of 11 and 14 engaged in science, technology, engineering, and mathematics (STEM) activities. DiSalvo et al. demonstrated that a digital game format provided a social context for learning to promote challenge. Participation in learning networks related to the game reveals how the technology can be modified and adapted to create customized challenges and outcomes (p. 138).

Pollara and Zhu (2011) examined mentor-mentee relationships for high school and college science students using Facebook. The 11-mentee participants were 11th graders, nine were female, two were male, and all were African-American. The 30 mentors were faculty members from a public state university. Weekly face-to-face meetings were required with the additional choice of participating virtually using a Facebook page created for and limited to the group. Four areas were designed for the page: science questions of the week, student questions about science, science jobs, internships, scholarships, and an area where students could work as a group on a required science project. A survey, analysis of the Facebook postings, and interviews with the participants revealed mentors did not participate at a sufficient rate to create a strong virtual relationship with their mentees. Mentees became discouraged when they received little or no feedback and slowed their participation. Students expressed their feeling that

the page was helpful for the group project. They also felt their questions had been answered. In the results discussion Pollara and Zhu posited having to keep the Facebook private may have been one cause for the problem; the page was difficult for participants to locate (p. 3332).

Cain and Policastri (2011) used Facebook specifically because of the informal and social nature of the platform. Their focus was to bring experts in the fields of pharmacy management and leadership into closer proximity to their students. Rather than being a "friending" activity, the purpose of having the students participate was to establish a forum where questions could be asked and answered by experts from outside the university in a less structured more "natural" environment beyond what students would normally consider an educational setting (p. 2). A series of links were posted to additional reading, resources, and individuals. The activity was optional and no posting requirement was established to avoid what the authors called "the creepy treehouse" effect (p. 2). The creepy treehouse effect takes place when a person in charge, in this case the instructor, requires the students to participate in a "social or quasi-social" event like Facebook (p. 2). One incentive to join the Facebook group was additional extra credit questions on the final assessment that focused solely on the activities within the Facebook page. Eighty-four percent of the participants indicated the possibility for extra credit was the primary reason they joined the Facebook group. Results were garnered through student questionnaires, assessment questions, and dialogue with a focus group. Students felt making participation optional was beneficial. They liked being able to read and post as they normally would using a variety of technology platforms and locations outside the

classroom. The research suggested social media sites like Facebook may provide an informal structure for formal learning. An examination of participant use of social networks provided an understanding of how their informal personal learning networks could be optimized for formal learning activities.

Building on her previous research Jahnke (2010, 2012b) explored how informal learning using social media can be effectively implemented in the classroom using "didactical design" (p. 62). Didactical design draws a distinction between "teaching concepts and learning activities" calling them instead "designs for teaching and designs for learning" (p. 62). Greenhow (2008), Johnson (2010), Tremblay (2010), Miller (2012) and Blaschke (2012) also point to the need for changing how learning objectives were applied within the classroom. Greenhow called for "re-imagination and grassroots ideas" (p. 188). Johnson, Miller, and Tremblay suggested improving existing educational practices by using technologies already owned by students in a bring your own device (BYOD) model (p. 22). Blaschke advocated using a collaborative setting, individualized learning contracts with a student centered curriculum, and questions that are created by the student to focus and clarify their learning (p. 60). Jenkins (2012) described connected learning, a model close to Jahnke's didactical design, as a way to further student engagement through social connections, an increase in educational opportunities, and active participation by all members (p. 3).

Tay and Allen (2011), using the constructivist and social constructivism theories as the foundation, found the use of social media as an authentic assessment tool in an online classroom allowed students to work in collaborative settings improving their

engagement and increasing their knowledge base. The university students in this research took a collaborative assignment and broke it into equal sections for each member to complete with final assembly taking place in a wiki where all could view and edit the project. This "collective individualism" or what Tay and Allen called "networked individualism" may have been a result of college schedules (p. 160). The social media allowed the groups to work at a distance and produce a quality product that demonstrated their collective knowledge. The choice of social media platform may depend upon what is available to and comfortable for the students and their mentor and what will allow them to complete the tasks required (p. 162).

Jahnke (2012b) found that incorporating social media with the didactical design model made learning visible particularly in the use of digital portfolios. The research included a computer science program for bachelor of arts and masters of arts students over a seven year period using a mixed methods approach. Interviews, questionnaires, statistics, content analysis, and data logs were used to support the thesis that using social media in an informal setting is a positive adjunct to formal educational practices where learners are motivated on all levels: "cognitive, affective, and conative" (p. 64). Each of these learning models provided a context for participant perceptions of informal personal learning networks with a formal learning setting.

Arnold and Paulus (2010) also described a move from simply connecting information to connecting individuals in their qualitative case study of university based, informal, online, social relationships developed through a Ning. Ning, as explained by the authors, is a free, online platform where users can construct a website for social

interaction that is customized to the creator's specific needs (p. 188). The research included the views of Professor Arnold, the class participants, in-service teachers, and an outside observer, Dr. Paulus. The students used the Ning and face-to-face classroom instruction in a blended instructional format for a computer-assisted language learning class (CALL). An experiential learning format based on Kolb's (1984) four step model where reflection and observation after experiences leads to a synthesis of information into new concepts and more experimentation much like Jahnke's (2012a) conation of learning, was used as the guiding pedagogy. In this case students were not anonymous and the majority of their interaction took place in the classroom portion of the Ning rather than in the areas where open comments and sharing might take place. Student perceptions of the Ning showed strong "community building, modeling/feedback, and authenticity" not the outcome expected by the instructor in the original Ning design (p. 192). Tay and Allen (2011) and Schroeder, Minocha, and Schneidert (2010) found similar student perceptions with motivation, teamwork, and peer feedback the most favorable features reported by the research participants.

Callaghan and Bower (2012) studied the use of a Ning with a population closer to the target age in this dissertation, year 10 in the Australian school system. Two classes of commerce students were provided laptops with a secure connection to the Ning network where they accessed chat, discussion boards, blogs, video and photo resources, and an assessment portfolio. Contributions were analyzed and divided into two categories: social contribution or learning contribution (p. 5). Each class provided a unique picture of how they put the Ning network into practice.

The first group primarily used the chat feature, completed a handful of the assignments, and did not complete the assessments. Their discussions were perfunctory demonstrating a low level of academic rigor. There was also a high level of plagiarism in this group. All of the students in the first group described the Ning as a "social" site (p. 11) where they were able to develop and maintain online relationships through friending and gifting activities. The teacher in this group did not participate in the Ning and did not communicate with the students regularly. When students had questions they did not seek help from the teacher.

The second group rarely used the chat feature, completed all the assignments, and completed all the assessments. Their discussions showed the ability to synthesize their thinking and create connections between the Ning "tools" (p. 8). The teacher in this group reported students were independent in their learning and showed a high level of self-direction. The second group described the Ning as an educational resource. They participated in the friending and gifting activity but it was not their primary focus. The teacher in this group was quite active through discussions with groups and individuals. The teacher logged into the Ning during each lesson assuring students were participating, sharing submissions using the digital projector, assisting with the editing process prior to student posting, friending students, and giving virtual gifts for exemplary efforts. Students were proud of these gifts, posting announcements about their receipt on profile pages. This prompted other students to increase their efforts so they too might receive a gift from the teacher. The researchers found this behavior created strong ties between the

teacher and the students. Schroeder et al. (2010) supported these findings in their evaluation of the strengths and weaknesses of social software.

Callaghan and Bower (2012) found that even though the subject matter in the two Nings was exactly the same, the teacher and their relationship with the students was the deciding factor determining the success or failure of learning. The role of the teacher was a significant factor in student learning where social media was employed (Chen & Bryer, 2012; Foshay, 2010; Kronholz, 2011; Lavigne & Mouza, 2013; Maninger, 2006; Tay & Allen, 2011). Blanketship (2011), Ralph and Ralph (2013) and Ruthven (2009) expressed concern about the amount of additional teacher preparation time required to maintain an active level of participation in the chosen social media venue. The Ning allowed for self-directed learning to take place in both groups but the support and encouragement from the teacher in the second group made the difference between informal social learning and informal educational learning. This study did not provide insights from the teachers' perspective. Student perceptions of teacher use and implementation of informal educational learning within a social context provided insight into best practices from a student perspective.

The Odder Project, a qualitative study where iPads were used in Danish classrooms, used the didactical triangle to show the use of social media produced an alteration in teaching practices from "learning as consumption to a focus on action and a focus on relationships" (p. 66). Jahnke (2102b) stated the iPad made a difference in this research because it was seen as an educational tool, much like a textbook, rather than being seen as technology. This view, as reported by the teachers, was almost entirely due

to the iPad's ease of use. The Odder Project met the five criteria Ruthven (2010) identified as being required for successful technology integration: an appropriate "working environment," a strong "resource system," a well planned "activity format," lesson plans, and a well considered time frame for activities both in and outside of class (p. 135-145). Jahnke's study included elementary age students however, the age range may not hinder the applicability of the research to this dissertation. Tablet, iPad, Android, and iPhone technologies could also lead to changes in learning for the groups being studied in this case.

Greenhow et al. (2008) researched how high school students used social networking sites like MySpace to become involved in the political process during the 2008 Presidential campaign. One subject was encouraged through MySpace "friends" to visit the Obama website. Once there the subject watched videos, read the senator's biography, registered to vote, interacted with other visitors to the page, and participated in local events related to the campaign. These activities had direct links to the formal, educational, social studies standards and demonstrated a clear understanding of the election process gained from learning in an informal setting.

Kassens-Noor (2012) examined how Twitter, a microblogging application that allows users to share short messages of less than 140 characters, was used in a higher education setting as a means of active, informal collaboration in a peer-to-peer scenario to enhance learning. Students were given a group assignment and provided the choice of using Twitter to collaborate or completed a diary that would be discussed with group members in a face-to-face setting. A third option that was not chosen by any of the

participants was to write a five thousand word essay. At the end of the project students were given a quiz to establish their knowledge base, measure the covered content, retention of information, and measure the success of the educational practice. Tweets and diaries were also evaluated. Students using the diary format retained more information due in part to a face-to-face group meeting just prior to the test. Kassens-Noor's findings indicated Twitter allowed students to retain information but the nature of the tweet, 140 characters or less, did not allow room for active thinking or deep reflection. Schroeder et al. (2010) cited this as a weakness found in their research on social software. This raises the question of whether Twitter would provide the reflective and robust platform desired in an educational learning setting.

"All learning begins when our comfortable ideas turn out to be inadequate" (Dewey, n.d.). The research indicated more learning is taking place outside traditional, formal classrooms through the use of social media and personal learning networks. The teacher played a seminal role in the implementation and effective employment of informal learning to achieve formal educational goals. Determining the perceptions of the participants in this study with regard to their use of social media and personal learning networks within both formal and informal settings filled a gap in the research with regard to at-risk populations at the high school level.

Personal Learning Networks: Learning Contributions and Social Contributions

While the term, personal learning network, seems to have existed in conversation for some time, Tobin (1998) was the first to describe it in research. He explained personal learning networks (PLN) as a group of people with whom you "connect for the purpose

of learning", typically of an informal nature, but with the ultimate goal of enhancing the educational experience for all parties within the network (http://www.tobincls.com/learningnetwork.htm). Learning networks can take many varied forms or systems of communication. They can be familial, invisible, educational, or collegial. Conversations can be constant, intermittent, informal, or formal. The general frame for each of these learning networks was the same; people working together toward a common goal. Hsu and Ching (2011) identified four vital elements for the virtual learning communities in their research; "communication, collaboration, interaction, and participation" (p. 588). Laat and Schreurs (2013) established moving from a culture of getting and giving information to one of participation brought an easily accessed, integrated, and sustained approach to learning (p. 1433).

Dabbagh and Kitsantas (2012) found that collaboration and interaction were critical components at the second level of their pedagogical framework supporting students in the creation of personal learning environments (PLE). Additionally, they felt "personal information management" and "information and aggregation management" formed the first and third levels (p. 5). Utilizing this structured approach allowed instructors to support students as they established "self-regulated" learning practices through the employment of PLEs (p. 6). Lester, Rowe, and Mott (2013) articulated the need for "self-initiated learning" and an appropriate level of "challenge" (p. 227). Their technique was a progression through the process of self-regulated learning within a PLE framework where students began by learning how to manage their technology identity, use the PLE as a "social and collaborative" learning space, and in stage three, create a

synthesis of the information that impacted the learning experience through reflection (p. 6). This framework can be adapted to a variety of social media tools. Lavigne and Mouza (2013) also established that reflection played a fundamental role in the 21st century skills of critical thinking, innovating, collaborating, communicating, and "self-regulating" (p. 269). Social media provided a platform for the informal, personal learning network based, educational experience. It allowed the learner to have a high degree of autonomy, motivation, and connection. Using a wide variety of digital devices, the learner was able to access and manipulate information and media, share with the members of their personal learning networks (PLN), discuss with the PLN members, form new ideas or draw conclusions, and apply these ideas to new situations (Ahn, 2011; Chen & Bryer, 2012; Ralph, M., & Ralph, L., 2013). Mouza and Cavalier (2013) supported these findings adding that the autonomy and responsibility led to an increase in motivation, persistence, social connection, and the willingness to further educational endeavors (p. 149).

In the educational world personal learning networks can include any individual in the community who has an interest in learning. It might be a group of students within a grade level, a parent or other family member, teachers and other school personnel, a boss or colleagues from work, a friend or friends, or a cyber acquaintance known only by their online presence (Hooft, 2013). The personal learning network may also be community members (Hsu & Ching, 2011). Senge (2000) and Laat and Schreurs (2013) asserted that learning does not take place in isolation. Students must work within a community to create relationships that foster growth and learning (Pegrum, 2010, p. 7; Senge, 2000, p.

16). The goal of any of these networks was the same; to assure that all students are able to learn. Gee (2000) described affinity groups that could operate at a distance maintaining connections for the purpose of achieving specific goals. He described membership in the groups as having a class-based status influenced by both formal and informal learning events. As stated earlier in this paper, learning occurs when we are able to see and understand from a different perspective. True learning changes us. Ideally an educational system exists to allow true learning to take place.

DuFour (2004) stated a professional learning community (PLC) should concentrate their efforts on the process of learning. Blaschke (2012) described learning as "knowledge construction" and collaborative learning as an iteration of knowledge produced by a group who create rather than obtain knowledge. While their work dealt with teachers in an educational setting, several of the seminal ideas have an implication for how learning could be structured for the population of this study in a virtual format. Learning within a PLC requires each member to participate in the analysis and reflection of the learning process, what Jahnke (2012a) called the "conation of learning" (p. 395) and Hsu and Ching (2011) called "learning by doing" (p. 587). A culture of collaboration must be established to insure all members feel as though they are a part of a group effort (Blaschke, 2012, p. 9). Rheingold (2012) discerned students need to be educated in the correct use of social media using what he called the "five interconnected literacies of social media: attention, participation, collaboration, network awareness, and critical consumption" (p. 53).

Laat and Schreurs (2013) determined that while new information was provided in formal educational sessions it was the informal personal learning networks that "interpret, embrace, share, compile, contextualize, and sustain" the learning (p. 1423). Their work with a school district in the Netherlands determined how teachers applied what the authors called "networked learning" to address a common problem (p. 1424). They used an online survey to determine the connections for the individuals being studied. The results indicated the associations tended to be school-based. Next, they introduced a synchronous communication element that for the first time allowed all the participating teachers to meet virtually. A follow-up survey established the connections had increased significantly. The results of the collaboration whether social or educational will demonstrate the success of the PLC.

Couros (2010) provided a more current, Twitter based, definition for a PLN by bringing in the term "social capital" where Twitter acts as the environment for the PLN allowing easy connections for learning activities through a personal learning environment (pp. 14-15). Each PLN is unique to an individual and the value of the PLN is enhanced as the number of members contributing to the learning network increases. According to Couros (2010), Twitter seemed to have significantly improved the ability of PLNs to operate effectively (p. 17) but other entities like blogs also seemed to be useful devices in the creation of a PLN. Rath (2011) concurred with these findings in her research pairing Twitter with a learning management system (LMS).

Hsu and Ching (2011) explored the use of Twitter as a "virtual learning community" (VLC) tool working with adults participating in an online graduate class. In

this case Twitter was used as a support tool for an online class hosted by a learning management system (LMS). Both photos and tweets were required elements in weekly class activities. The instructor was available for support and clarification purposes but participated in the Twitter exercises minimally. Students reported feeling more connected to their classmates preferring the weekly exercises in Twitter over the weekly discussion board activities in the LMS (p. 594). They also felt the visual images shared through Twitter posts, called "tweets," provided an opportunity to apply what they were learning and to share that information with the VLC. Several students commented on the constraints of having to limit their conversations to 140 characters or less. Schroeder et al. (2010) and Kassens-Noor (2012) also commented on this weakness. Hsu and Ching concluded that Twitter should be paired with other virtual tools to create a stronger sense of community and learning. Blending two social networks, Twitter and an LMS for example, could provide the depth of reflection and active thinking Kassens-Noor mentioned previously as lacking. Dunlap and Lowenthal (2009) found pairing Twitter with an LMS was highly effective in creating a sense of social presence, connection, and an informal learning space for their college courses (p. 130). Holland and Muilenburg (2011) suggested applications like Edmodo, a moderated educational site with the look and feel of Facebook, should supplement not supplant regular classroom discussions. In the study by Hsu and Ching the concise nature, 140 characters per Tweet, was seen as a benefit to clarity and informality. Greenhow and Gleason (2012) explored the use of Twitter as what they termed a "backchannel" for maintaining contact outside the classroom (p. 473). None of the research included populations of at-risk high school

students. Exploring the use of Twitter with the population in question for this study provided additional information about their perceptions of social media.

Kyndt, Dochy, Onghena, and Baert (2012) studied "low-qualified employees" who experienced success in the Belgium system of education and training in a formal setting. The authors wanted to determine if the training and education would make the participants more competitive in the labor force and what motivated them to seek to improve their employment prospects. For this research a "low-qualified employee" was a person, without regard to age, who did not have a "secondary education diploma" an equivalent to a high school diploma in the UNITED STATES (p. 166). Their findings indicated two factors contributed to the lack of success for the initiative. First, low-qualified employees, due to their positions within work force, were not afforded the access to training and development. Second, many lacked the motivation or "learning intention" to avail themselves of training and development opportunities when those openings were provided (p. 167). Eynon and Helsper (2011) corroborated the findings in their study of British adults who were given the choice or were forced to use the Web for educational purposes. They found more highly educated individuals both male and female who were confident in their online skills, had access to a computer and the Internet at home, had children over the age of 10, and fell into the younger range of adults tended to use the Web for formal and informal learning as well as fact checking (p. 542). Learning intention was exhibited even among those who were not well educated and were economically disadvantaged as evidenced by their participation in formal and informal learning activities at least weekly (p. 543).

Kyndt et al. (2012) identified a number of factors among those participants who did exhibit learning intention. From the organizational perspective an encouraging environment must exist where employees are nurtured through the learning process and persuaded by their employer and colleagues. The employee must have the perception that they perform a range of tasks or activities. The employees must have a desire to retain their current position and a "self-directed" attitude toward the employment. A high level of "autonomy" must be present in their current position. They must be satisfied with their salary and maintain the view that taking advantage of a learning opportunity would increase their salary. From the individual employee perspective prior positive participation in learning activities created a willingness to become involved. Younger and less senior participants were more likely to participate. For this study it appeared that women with children participated at a much lower rate than other groups both male and female. The terms of employment including length or type of contract were contributing factors (p. 170). Some of the participants in this study fell into categories similar to those shared in this research. Their personal learning networks provided a glimpse of their learning intentions which impacted both their learning and social contributions.

Social networking experienced its infancy when Milgram (1967), a psychologist, began his "small world experiment." Milgram studied the process a letter went through on its return to a specific unknown addressee. His finding of 5.5 steps gave rise to the theory that the world is separated by no more than six degrees (p. 66). His early work in networking and the growing popularity of social networking sites gave rise to additional studies on the topic employing a tool called social network analysis (SNA). One of the

largest SNA studies was conducted by Mislove et al. (2007) who studied over 11 million Flickr, YouTube, LiveJournal, and orkut users with 328 million links. Their findings indicated networks are formed around "high degree nodes" or "epicenters" where a user formed multiple links and visitors linked back to the epicenter. When new information was introduced into the high degree node it was rapidly disseminated throughout the network spawning the term "going viral" (p. 40). This conclusion supported Milgram's small world theory. Mayes and Fowler (2006) approached social networking from the perspective of digital literacy and educational uses. They viewed the virtual relationships as an extension of classroom conversation allowing students to take on dual roles of learner and educator. Their concepts fit well with informal learning and also tied to Milgram's small world theory.

Outside the connected world a group exists that remain disconnected. Ahn (2011) used the term "digital divide" to define the lack of access to technology or exclusion from social media. This group may not be able to complete Kolb's cycle (1984) and could be denied opportunities to develop the skill sets, create relationships, acquire information, and establish personal learning communities. One of the focuses of this study was to determine if the subjects operated within the connected world and if they did how those connections impacted their educational experiences.

Chapter 3: Research Method

The purpose of this qualitative inquiry was to interview and document the perceptions of and influences on three distinct populations of students at risk of failure in high school within the context of social media, personal learning networks, technology identity, and social learning. The results documented the learning needs, communication preferences, and technology identity choices for students at risk of failure in high school. Despite numerous interventions and accommodations, at-risk students continue to turn away from the traditional, formal educational system. This study provided an indication of why some students no longer felt that high school was meeting their needs and how social media and personal learning networks played a role in keeping them in school. The study described the role technology, specifically personal learning networks and social media, played in keeping at-risk high school students in school. The research assessed student perceptions with regard to earning a diploma and the role that technology, with an emphasis on personal learning networks and social media, played in their high school experience. The results helped fill the gap in the literature pertaining to student perceptions about technology and their use of social media to make connections to their peers within the educational setting, unknown individuals outside the school setting, and mentors both inside and outside the school setting within personal learning networks.

Chapter 3 is organized into five sections to provide a context for the methodology used in this study. Section 1, which addresses the research design and rationale, contains the research questions, as well as descriptions of the central phenomenon, research tradition, and rationale for the selected tradition. In Section 2 on the role of the

researcher, I explain my function with regard to data collection and analysis, my biases or relationships, and any other ethical considerations that could negatively affect the outcomes of the research. Section 3, on the methodology, contains descriptions of the procedures used for data collection, selection of participants, and analysis of data. Section 4, concerning issues of trustworthiness, covers issues of internal validity, external validity, dependability, confirmability, and the ethical procedures required. The final section provides a summary of the previous information.

Research Design and Rationale

The research questions that established the roadmap for this study were created based on current literature related to the issues facing at-risk high school students living in a technological world.

Research Question 1: How does the development of a technology identity using social media and personal learning networks influence at-risk high school students to complete diploma requirements?

RQ1a: How does the development of a technology identity using social media and personal learning networks influence students who are considering dropping out of school?

RQ1b: How does the development of a technology identity using social media and personal learning networks influence students who have dropped out of school but are considering returning to the classroom?

RQ1c: How does the development of a technology identity using social media and personal learning networks influence students who have dropped out of school but have returned to complete their high school diploma requirements?

Research Question 2: What are the perceptions of at-risk high school students regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2a: What are the perceptions of high school students who are considering dropping out of school regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2b: What are the perceptions of at-risk high school dropouts who are considering returning to the classroom to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2c: What are the perceptions of high school dropouts who have returned to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

The primary purpose of this research was to interview and document the perceptions of and influences on three distinct groups of students at risk for failure in high school to provide insights into their use of social media, personal learning networks, technology identity, and social learning. This research was a qualitative work within the tradition of a single case study (Baxter & Jack, 2008; Yin, 2009). Individual interviews were conducted to determine how the students in question perceived the use of technology in

their personal lives, how technology enhanced or detracted from the school experience, how the population connected with social groups, how the population connected with school, reasons for leaving school, and students' plans if they dropped out of or returned to school. The students were recruited from a single entity, a charter school located in the southwestern U.S.

Qualitative case study allows "the researcher to explore individuals or organizations, simple through complex interventions, relationships, communities, or programs and supports the deconstructions and subsequent reconstruction of phenomena" (Baxter & Jack, 2008, p. 544). The relationships within this study centered on the use of social media, personal learning networks, and educational experiences for the described populations. The community included high school students within a charter school program in the southwestern U.S.

The research questions fulfilled Yin's (2009) requirement for case study inquiry by using the terms "how" and "why" (p. 2). Specifically, questions were asked about how and/or why students perceived their technology identity, connected with social media, used informal learning to enhance formal learning activities, and interacted with personal learning networks. Stake (1995) suggested that a case study is useful when "opportunity to learn is of primary importance. A case UNITEDstudy approach provides a mode of inquiry for an in-depth examination of a phenomenon" (p. 244). Yin (2009) characterized case study research as "empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (p. 23). He

stated that the "distinctive need" for case study research "arises out of the desire to understand complex social phenomena" (p. 14). Yin stated that a case study is "warranted or appropriate when the case is revelatory" (p. 48). A revelatory case is where a "belief or assumption that the problems discovered in a particular case are common to other cases as well" (p. 48). If this study can serve as a revelatory case, according to Yin, there is a foundation for discovering and describing problems that may be common to other cases.

Stake (1995) described three types of case study: "intrinsic, where one explores a particular case to gain a better understanding of it; instrumental, where a particular case is examined to provide information or insight on issues or the refinement of theory;" and collective, where "a number of cases are studied jointly in order to inquire into the phenomena, population, or general condition" (p. 237). Stake described collective case study as "the study of a number of cases in order to inquire into a particular phenomenon" (p. 4). Yin (2009) described the finding in case study as "analytical generalizations" as opposed to "statistical generalizations" (pp. 60-62). The collective case study design was chosen because it allowed for validation of the roles social media, personal learning networks, and technology identity played in lives of the at-risk student groups defined in this research. *Collective case study* is a term Stake applied to research in which more than one case is being studied. Similarities and variations between and among the cases are examined to determine if there are duplicate findings. Stake emphasized the need for great care in case selection to assure accuracy of contrasts and comparisons (pp. 4-7).

Other qualitative research designs were considered and deemed inappropriate based on the goals of the study and the research questions. Phenomenology might have been a logical choice for this project. This tradition involves achieving a full understanding of specific "events" and their "political, historical, and sociocultural contexts" (Yin, 2011, p. 14). Husserl (1962) indicated that the experience or voice of the participants anchors such research (p. 48). Gaining understanding of experiences through the interview process is a strength of this tradition that relates to my research; however, this study included the voices of multiple individuals through the three described at-risk student groups rather than a singular phenomenon. Phenomenology was not an appropriate tradition for this study.

Multiple case study was also considered as a research methodology. Yin (2009) indicated that multiple case study "(a) predicts similar results (a literal replication) or (b) predicts contrasting results but for predictable reasons (a theoretical replication)" (p. 54). This study involved a single case, at-risk high school students, with three points of data collection to triangulate the data and provide greater validity. The three data points were the three groups of at-risk students: at-risk high school students who were considering dropping out, at-risk high school students who had dropped out but returned, and at-risk high school students who had dropped out but were considering returning to school.

For this study, I assembled and analyzed a variety of data through the interview process; however, participants representing a single case, at-risk high school students, were questioned in depth to provide reliability and validity for the study. Because the

multiple case study tradition relies on the use of more than one case, it was deemed to be inappropriate for this research.

This study included three unique groups of at-risk high school students taken from different points in their educational experience: at-risk high school students who were considering dropping out, at-risk high school students who had dropped out but returned, and at-risk high school students who had dropped out but were considering returning to school. Previous studies focused primarily on university students and educators. In addition, the relationship between formal and informal learning using social media and personal learning networks was not explored for the populations in question. Technology identity, as defined by Goode (2010), is an area of inquiry that is relatively new and unexplored. The analysis in this study revealed common premises, understandings, observations, perceptions, and influences (Stake, 2006, p. 445). The interviews provided a fecund image of how young people in their late teens and early 20s access social media, establish personal learning networks, use a variety of technology, and view their technological abilities within the educational setting.

Role of the Researcher

My role as the researcher was to conduct in-depth interviews about the development of technology identity and its relationship to the use of social media and personal learning networks for three distinct groups of at-risk high school students. Their perceptions about the use of formal and informal personal learning networks and the relationship of these networks to learning in a school setting were also explored. A letter of cooperation to conduct the research was obtained from the principal of the charter

school the subject students attended (Appendix A). I asked the principal and counselor to assist in the student selection procedure by providing initial contact information and allowing the interview process to take place within their facility when possible. Students were chosen based on their graduation status, at-risk designation, and age. I obtained permission through Walden University's Institutional Review Board (IRB) to conduct the study prior to contacting any participants. After the IRB process was completed, I contacted participants, met with them to discuss the requirements for participation, provided a letter of invitation, and obtained their written consent if they agreed to participate. Once their consent was obtained (Appendix B), arrangements were made to meet and conduct the interview. Interviews were conducted face to face or over the phone, through Skype, or with Facetime. I knew none of these students prior to the commencement of the interview process.

The cooperating facility provided a private, quiet, and comfortable space for us to use. The relaxed atmosphere allowed a level of ease in conversation and a natural flow to the questions and their responses. Yin (2009) stated the researcher must have the ability to ask probing questions, be objective, be an excellent listener, and sustain a perspective that goes beyond the case being studied (pp. 67-69). All interviews were recorded with a digital recording device allowing for easy download to a computer for translation to a Microsoft Word document using Dragon Naturally Speaking. The verbatim transcript was reviewed for accuracy and was compared to the recording to assure all words were translated appropriately. The interviews were about an hour in length.

While bias is a concern in any research, my primary focus was to maintain a level of objectivity when securing permission to conduct the interviews, throughout the interview and data review process, and in the coding and interpretation of the data. The final analysis and explanation was made from my interpretation of the collected data. The final reports were stored on a flash drive locked in my personal safe for a period of no less than five years, after which time I will erase and destroy the flash drive.

The data were sorted into categories through coding using HyperRESEARCH software. The coding allowed a cohesive pattern to appear providing answers to the research questions seeking to explain how personal learning networks, social media, and a technology identity might impact the educational experience for high school students in the three described groups. The data were shared with charter school personnel during their monthly staff meeting. It was also shared with the local school district that operates a program for at-risk high school students. Findings were shared with the student participants through a summary document one to two pages in length.

Methodology

This section includes a rationale for selection of participants for the study, instrumentation, recruitment procedures, and issues about ethics and trustworthiness. The sections that follow will provide details to provide other researchers with the tools necessary extend the study. A complete data analysis plan is included in this section.

Participant Selection Logic

Stake (1995) defined a case as "a special something to be studied" (p. 133). The case in this study was at-risk high school students taken from a population attending a

charter school located in the southwestern U.S. With the case determined, Yin (2009) and Stake indicated the sample selection might take place (p. 58, p. 4). According to Stake (1995), case study research is not about sampling. A case is not studied to understand other cases. Rather the purpose is to understand thoroughly this case (pp. 4-6). For this study, the criteria for inclusion in the case consisted of being over the age of 18 with the at-risk designation based on the criteria of the National Center for Education Statistics (1992, p. 2). Graduation status was also a consideration. Participants were not high school graduates. They used social media in their lives outside of school. They were attending or applied to attend the chosen charter school. They fell into one of the three groups: considering dropping out, dropped out and returned to school, or dropped out and are considering returning to school.

In a qualitative study analyzing perceptions and influences through the how and why implications, the most appropriate criteria, are what Yin (2011) terms purposive. Purposive sampling was defined as samples selected in a "deliberate manner" (p. 88). Its purpose is to concentrate on gaining information to build understanding rather than to create generalizations. Purposive sampling is based upon participants meeting specific criteria. In this study participants were over the age of 18; held the at-risk designation; and attended, attended high school and returned to, or will attend the public charter high school in question. They have considered dropping out, have dropped out and returned to school, or have dropped out and are considering returning to school.

Eleven students were interviewed. Four were at risk for failure from high school, four had already dropped out of high school and were considering returning to school,

and three had dropped out of high school and later returned to complete the requirements for graduation. According to Yin (2011) selecting too many participants can impede the development of the case and the details needed to describe the case fully (p. 89).

Data collection included in-depth interviews with each of the participants. Nine to 15 was a manageable sample size that allowed their perceptions of and influences on technology identity, social media, personal learning networks, informal learning, and formal learning to be explored with the appropriate depth. Saturation occurred when, during the course of the interview, no new information seemed to be emerging. Each interview was scrupulously analyzed and interpreted to assure breadth and depth for the case. Further, as allowed by Yin (2011) and Stake (1995), saturation may relate to practical issues, such as resources to conduct the research and availability of participants. In this study, saturation occurred because of the richness of the interview data.

Participants were selected from a list provided by the counselor of the charter school. Initial contact took place through a phone call or through email. The appropriate consent form allowing for participation in the study (Appendix B) was completed at the time of the first meeting or through email. Participants were interviewed at a time and location that was mutually convenient utilizing the charter school facility when possible. Face-to-face interviews were preferred but telephone, Skype, or Facetime calls were also employed. All interviews were recorded with a digital recording device and were transcribed verbatim. A heterogeneous mix of male, female, and ethnicity would be ideal but was not possible given the populations that typically fall into the at-risk category.

Instrumentation

Recorded focused interviews with open-ended questions was the principal source used for data collection (Yin, 2009, p. 107). A conversational interview was conducted using questions tied to the case study procedure and the research questions (p. 106). Probing questions were asked after participant responses to assure saturation was reached and validity was maintained through the collection of "rich" data (Yin, 2011, p. 79). Each interview lasted approximately an hour but that time varied depending on the rapport established with the participant and their willingness to supply thorough answers. Stake (1995) noted that every participant comes to the interview with different backgrounds, experiences, and stories. Ultimately the interviews lasted until the conversations had run their course. A small number of key questions related to the research focus were formulated in advance to provide an agenda for the interview (p. 65).

An introduction to the study and explanation about recording procedures prefaced all interviews. For research question 1: how does the development of a technology identity using social media and personal learning networks influence at-risk high school students to complete diploma requirements, the following questions guided the interview.

1. Tell me a little bit about yourself including your hobbies, outside interests, and school experiences.
2. Tell me about your experiences with technology.
3. An online identity means the face that you present to the digital world through social media.

   a. How would you describe your online identity when engaging in activities outside of school?
   b. How would you describe your online identity when engaging in school activities?
4. Are there any groups of people that you know who also like (hobby or interest) that you communicate with using (social networking site)?
   a. Tell me about those groups and the kinds of communication you share.
   b. How do you use your social networking skills at school?
5. How do you think a social network helps or might help you continue to be or be more successful in school?
6. How would you describe your online relationship with people who are involved in your education?
   a. How does this relationship influence your thinking about leaving, staying, or returning to school?
   b. If there were something you could change or improve about this relationship, what would it be?

For research question 2: what are the perceptions of at-risk high school students regarding the use of informal personal learning networks for formal learning in the school setting, the following questions guided the interview.

1. You mentioned at home you use technology to (XXX). How do you use technology to find information or solve problems about (hobby or interest)?

2. How do you use technology to find information or solve problems about topics you are covering in school?
3. How might you bring the networking skills you have learned at home into your school work?
4. How do the groups of people you interact with through social media influence your ability to find information or solve problems at school?
5. What technology tools do your teachers use to help you ask and answer questions, collaborate with your classmates, interact with teachers, interact with content experts, reflect on learning, and showcase your work?
6. What technology tools would you like to see your teachers use to help you ask and answer questions, collaborate with your classmates, interact with teachers, interact with content experts, reflect on learning, and showcase your work?
7. What other information would you like to share about how technology plays a role in your learning experiences at home and at school?

Procedures for Recruitment, Participation, and Data Collection

Each participant identified by the counselor of the charter school was approached to discuss their possible contributions to the study. A letter of introduction was provided. Once the students agreed to participate in the study an appointment time was established. The appropriate consent forms were provided, completed, and signed in advance of beginning the interviews. Since all individuals were over the age of 18 the adult consent form was used. I conducted one thorough interview of about an hour in length with each participant. The one hour time frame was extended with the agreement of the participant.

Each interview was tailored to the needs of the participant with their responses determining the next question. Every effort was made to create a welcoming atmosphere where the participant felt comfortable sharing their experiences. Participant narratives were recorded with digital recording devices that allowed for transcription using a voice recognition software, Dragon Naturally Speaking. Two devices were used in case one device failed to operate correctly. Written notes taken during the interview were kept to a minimum to allow for eye contact and a more natural flow to the conversation. After the interview anecdotal observational notes were made. The transcripts were carefully reviewed for accuracy and then coded to begin the data collection process. The participants were provided with a final copy of their interview along with my contact information for follow-up purposes.

Triangulation was achieved through the collection of three separate data points represented by the three populations of at-risk high school students (Yin, 2009; Stake, 1995). Using three groups, those in school who are at-risk of dropping out, those who have left but returned, and those who have left but are considering returning, provided greater accuracy and reliability of the data. It was expected between 9 and 15 students would participate in the interview process. The principal of the charter school indicated there were sufficient numbers of students meeting the criteria of this study to allow the interviews to reach the expected outcome.

As the interviews drew to a close the participants were thanked for meeting with me and reminded they may request to be withdrawn from the study at any time. I also provided them with my Skype, Facetime and email accounts should they wish to share

additional thoughts or information relevant to the study. Participants were provided with contact information for the dissertation chair and the head of the IRB.

Data Analysis Plan

Data from individual interviews was transcribed verbatim and coded to determine themes and patterns. Yin (2009) described five techniques that could be used in the analysis, organization, and interpretation of the data (pp. 126-163). From these five, two were considered: pattern matching and explanation building. In the pattern matching approach, patterns from the study data are compared to predicted outcomes. When patterns match internal validity is strengthened (p. 136). Stake (1995) also described this technique calling it correspondence and patterns where data from the case is used to find areas of commonality and repetition (p. 78). According to Yin, explanation building is a specific type of pattern matching (p. 141). In explanation building, data is used to create a set of explanations about the case with the goal of creating ideas for future studies.

My goal for this research was to determine how the development of a technology identity through social media and personal learning networks influences the three groups in their educational goals. In addition, perceptions about informal learning in a formal educational setting was explored. Pattern matching appears to be the appropriate technique to use in the analysis of the data from this study. HyperRESEARCH qualitative analysis software was used to organize the data more effectively. In addition a manual analysis confirmed and refined the results. Discrepant cases were noted and added to the findings and final discussion.

Issues of Trustworthiness

The accuracy and trustworthiness of this study was ensured through a number of procedures. Qualitative studies require the establishment of methods for confirming accuracy. The methods include: credibility, transferability, dependability and confirmability (Yin, 2009, p. 40). Yin stated that in case study research it is required for these concepts to be applied throughout the research (p. 41).

Credibility

The information gathered from each participant was carefully reviewed to provide a thorough view of the case. Yin (2011) indicated the case, all the interviews, the data, and the analysis of the data, needed to be publicly available or "transparent" and open to "criticism, support, or refinement" (p. 19). The findings from this study were shared with the charter school instructional staff, Walden University peers, and the public at large through ProQuest. The findings represent what the data has revealed. The validity of the interview process was not determined by a singular measure. Rather a body of research demonstrates the relationship between the participants, the research questions, and the distribution of the data results.

Pattern matching added to internal validity as described in the data analysis plan above. "Triangulation of perspectives to the same set of data" was achieved through the use of three separate populations of at-risk participants: students who have dropped out of high school and are thinking about returning, students who dropped out but returned, and those considering dropping out (Yin, 2011, pp. 81-82; Yin, 2009, p. 116; Stake, 1995, p. 109). Member checking was achieved through allowing participants to read their

transcripts to review and verify the verbatim transcripts (Yin, 2011, p. 97; Yin, 2009, pp. 42-43; Stake, 1995, pp. 115-116).

Transferability

Transferability, or external validity according to Yin (2009), allowed the study to be generalized beyond the scope of the current case. Using "analytical generalization," where I attempted to generalize data around a larger theory, provided future researchers with the ability to identify other cases where the data may be applied (p. 43). In this case three theories have been chosen: Pink's (2009) concept of motivation, Siemens's (2006) theory of connectivism, and Bingham and Conner's (2010) theory of engagement and social learning.

Full descriptions from the three groups of participants with a broad range of interview questions provided a rich, thick account of the data (Yin, 2011, p. 79). Discrepant cases were found. The data were viewed within the context of the participant's interview as well as in contrast to the other participants in the study. Comparison was used to examine results across the groups (p. 79).

Dependability

Triangulation, member checking, and pattern matching procedures were employed to assure reliability and allow future researchers to duplicate this study and diminish "errors and biases" (Yin, 2009, p. 45). A case study protocol and database were established allowing all procedures to be documented completely. Interviews were transcribed verbatim. The date, time, location, circumstances, and other anecdotal information pertaining to individual interviews was documented immediately following

each encounter. Transcription of the recordings occurred as soon as possible after the interview allowing the time between the interview and member checking to be brief. All data were stored in a secure folder on my password protected, personal computer to assure proper management of the information.

Confirmability

The interviewer in a qualitative interview may influence the participant and, in turn, the participant may influence the interviewer. Yin (2011) called this reflexivity (p. 150). Reflexivity occurs when a bias enters into the research and can transpire in all forms of qualitative research. Maintaining an objective stance was critical to assure confirmability. The interplay between the researcher and the participant must be described at length to reveal all feelings and biases. I maintained a journal of my research encounters. If feelings and biases were found in the interview transcription, they were bracketed. "Unobtrusive measures" were collected to add substance to the interviews and their "nonreactive" nature will assure confirmability of the study (p. 146).

Ethical Procedures

The principal of the charter school working with me for this study has signed a letter of cooperation (Appendix A) confirming they would identify possible participants and grant access to the individuals at their facility. They also allowed interviews to be held at the school. I approached each participant over the phone, or by email to discuss his or her possible contributions to the study. A letter of introduction and an invitation was provided electronically.

All individuals involved in the study were drawn from a suburban metropolitan area in the southwestern part of the United States. I have not taught in nor had any connection with the area of the country in question and I have no connection with the charter school outside this study. The findings of this study may have an impact on the teachers and students within the charter school in question. It may also have an impact on the teachers in my home district.

Institutional Review Board (IRB) permission was sought prior to the start of data collection. All subjects were provided with a consent form that was thoroughly explained prior to signing. The individuals were informed of their right to withdraw from the study at any time even after the interview had been completed. After their signature had been obtained they were provided with a copy of the consent form, a letter of introduction that provided a brief overview of the purpose of the study, my contact information, and the contact information of my dissertation chair, the chair of the IRB, and the principal of the charter school. The participants' true names were converted to pseudonyms to protect their identity. My IRB approval number was 10-14-14-0098786.

The data obtained during this research will be stored on my password protected, home computer in a locked file until the dissertation is completed. Once the final paper is published all information, including drafts, forms, and other pertinent data were saved to a secure flash drive and stored in my private safe for a period of 5 years. Paper forms were shredded with the exception of the letter of cooperation and the participant consent forms. Those items will also be stored in my safe for 5 years. At the end of 5-year period

all paper materials will be shredded or incinerated. The flash drive will be destroyed to assure no data can be retrieved.

To assure I am aware of the appropriate procedures and safeguards when working with human subjects I have completed and passed a National Institutes of Health (NIH) office of Extramural Research course entitled Protecting Human Research Participants. This course covered the following areas that had an impact on my conduct during the interview and reporting process of this study.

- Describe the history and importance of human subjects protections
- Identify research activities that involve human subjects
- Discover the risks a research project might pose to participants
- Understand how to minimize the risks posed by a research project
- Describe additional protections needed for vulnerable populations
- Understand additional issues that should be considered for international research
- Describe appropriate procedures for recruiting research participants and obtaining informed consent
- Identify the different committees that monitor human subjects protections
- Understand the importance of study design in the protection of research participants (National Institute of Health, 2011)

The above topics were addressed in the course providing me with a strong foundation for ethical research practices.

Summary

The purpose of this qualitative inquiry was to interview and document the perceptions of and influences on three distinct groups of students at-risk of failure in high school within the context of social media, personal learning networks, technology identity, and social learning. Participants were drawn from a charter school in the southwestern portion of the U.S. This particular institution was chosen because all three groups represented in this study were found within the student population. A thorough outline of the procedures proposed for the completion of this study has been provided. The methods for the protection of human subjects have been detailed. Data from the study was analyzed through pattern matching with the assistance of a software application, HyperRESEARCH. The interviews conducted with the participants in this study was the primary focus of inquiry. Participants' insights provided valuable understandings into the dropout problem and how social media, personal learning networks, a technology identity, and social learning are being integrated into their educational experiences to help keep them engaged in the learning process moving toward achieving a high school diploma.

Chapter 4: Results

The purpose of this single case study was to assess student perceptions of the role technology identity, social media, personal learning networks, and informal learning play in facilitating the graduation of at-risk high school students. Three groups were analyzed: at-risk high school students who were considering dropping out, at-risk high school students who had dropped out but returned, and at-risk high school students who had dropped out and were considering returning in school. A conceptual framework based on Pink's (2009) concept of motivation, Siemens's (2006) theory of connectivism, and Bingham and Conner's (2010) theory of engagement and social learning guided the examination of participant responses.

Research Questions

Research Question 1: How does the development of a technology identity using social media and personal learning networks influence at-risk high school students to complete diploma requirements?

RQ1a: How does the development of a technology identity using social media and personal learning networks influence students who are considering dropping out of school?

RQ1b: How does the development of a technology identity using social media and personal learning networks influence students who have dropped out of school but are considering returning to the classroom?

RQ1c: How does the development of a technology identity using social media and personal learning networks influence at-risk students who have dropped out of school but have returned to complete their high school diploma requirements?

Research Question 2: What are the perceptions of at-risk high school students regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2a: What are the perceptions of high school students who are considering dropping out of school regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2b: What are the perceptions of at-risk high school dropouts who are considering returning to the classroom to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2c: What are the perceptions of high school dropouts who have returned to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

Chapter 4 is organized into seven sections: setting, demographics, data collection, data analysis, evidence of trustworthiness, results interpreted by research question and subgroup, and a summary of the data.

Setting

The public charter school used for this research was located in a rural county within the southwest region of the United States with a population of less than 200,000

(U.S. Census Bureau, 2013) and had been in operation for 19 years. The chosen high school was located in an area of the state in which the population was 91.2% Caucasian (U.S. Census Bureau, 2013). The school population at the time of this study was 150 students. Fifty-one percent of the students were economically disadvantaged (Texas Education Agency, 2014). The mobility rate was 30.5% in the 2014-2015 school year. The percentage of students with identified learning disabilities was 10.2%, where the state average was 8.5% (Texas Education Agency, 2014). Students traveled up to 30 miles to attend the campus. Bus transportation was provided to students living in a radius of about 20 miles from the facility. The most current unemployment rate for the surrounding area was 3.4%, compared to a state average of 4.1% and a national average 5.6% (U.S. Census Bureau, 2013).

A concentration on the arts, music, technology, and writing as well as small class sizes provided a unique and individualized approach to education at the charter school. Physical education, including yoga and fitness, combined with other sports was provided as student interests dictated. Students were allowed to maintain their individuality and encouraged to live the six pillars of character (Character Counts, 2014). Students were also required to participate in service to the community through a variety of opportunities including an association with Lions Club International, a community-based monthly farmers market, and other projects that benefited the area population.

Each of the 1-hour interviews was conducted face to face and accommodated student schedules and outside activities over a 2-week time frame. For the interviews, the

school counselor allowed me the use of his office, a quiet space removed from classrooms. The interviews were recorded with two digital recording devices.

Demographics

The 11 18-year-old participants all attended or were going to attend the same public charter school. Six were female, 5 were male, 10 were Caucasian, and 1 was Hispanic. These demographic characteristics of the sample closely mirrored the demographics of the school. Pseudonyms were given to all participants to protect their privacy: Teresa, Talia, Tabitha, Tanner, Danica, Dalton, Debby, Ryan, Ralph, Randall, and Rachel. These names also served to designate their group: the names of students who had considered dropping out begin with the letter T, the names of students who had dropped out and were considering returning to school begin with the letter D, and the names of students who had dropped out and returned to school begin with the letter R. All but two of the students were seniors prepared to graduate in May 2015. This group of students was selected in part because of their use of technology. A verbal sketch of each student is provided to give context to the data analysis section.

Teresa

Teresa liked to play clarinet, dance, and write. She belonged to a flash mob club at school to express her creativity with dance. She began using the computer around age 5 and quickly advanced to other computer-based games. She was part of the journalism staff on campus and had her own byline.

Talia

Talia was interested in art, philosophy, and science, with a particular interest in genetics. While she freely admitted that she did not achieve stellar scores in biology, an interest was sparked that kept her researching science topics online. She had an afterschool job working with infants at a local preschool where her mother was also employed. Her first computer experience involved music and learning games on the family's home computer. After an issue during sixth grade, her parents enrolled her in an online school for the rest of her middle school experience. She used the computer up to eight hours a day, four doing work for school and four connecting with other people her age through social media.

Tabitha

Tabitha enjoyed reading fiction and black comedy, journal writing, and music. She also liked to ride her bike for fun and as a mode of transportation. Her first memory of computer usage was taking keyboarding lessons in school during the first grade. In addition to learning to type, she learned the parts of the computer and how to navigate using the mouse. Her technology usage had expanded to using her smartphone almost exclusively. She enjoyed finding the music of her favorite bands using an app, downloading it from YouTube, and saving it to her phone or laptop. She identified herself as a visual learner who needed to have directions broken down into steps.

Tanner

Tanner enjoyed swimming, long boarding, and gaming. *Long boarding* is a form of skateboarding that allows participants to cruise with friends and "bomb" hills where

speed is the major goal. At age 5 or 6, he worked with his uncle to build his own gaming computer and was skilled at keeping his hardware and software in top condition. He was also into cars—Porsches, specifically—and followed several groups on Instagram. His goal was to save enough money from his future job to purchase his own sports car.

Danica

Danica was about to begin CrossFit training. She volunteered at a local animal shelter and wanted to volunteer for the adoption center in a local PetSmart. She was interested in the no-kill aspect of animal rescue. She liked to read, particularly fantasy and history. Her community service requirements were fulfilled through a connection with Lions Club International and the school's Humanities Club. She wanted to be a foreign exchange student during her college experience. Her computer experience began with a compact disc (CD) reading game. She had been homeschooled from kindergarten to fifth grade.

Dalton

This young man enjoyed art, music, drawing, and guitar. He was skilled at using Internet-based tutorials to find sheet music of his favorite bands, matching them to YouTube demonstrations of the same song, and teaching himself how to play the song on his guitar. His artwork was practice toward his goal of becoming a skilled tattoo artist after high school. His first experience with technology involved disassembling a radio to determine how it worked. He also took his toys apart and attempted to reassemble them. At the time of our interview, he was building his own guitar amplifiers to create different qualities and sounds.

Debby

Debby had recently begun a part-time job working as a cashier for a local fast food restaurant. She enjoyed sleeping, playing video games, cooking, and using her cell phone. She confessed that she had learned to cook in self-defense because her grandmother was "not the greatest of cooks." She planned on being a baker. Her technology use began with a GameBoy when she was 4 or 5. She continued to enjoy gaming, using her cell phone as her primary gaming device. She felt that she was the only person who influenced her to stay in school and stay motivated.

Ryan

Ryan enjoyed scuba diving, hanging out with friends, and traveling. He planned on traveling to China after high school graduation and staying for up to a year. Upon his return to the United States, he expected to go to college. His computer experience began in the first grade when he was given a video game console for Christmas. He began using CD-based learning games at home when he was in the seventh grade.

Ralph

Ralph was a skateboarding and dirt bike enthusiast. He was also extremely interested in video gaming. Ralph had his own YouTube channel and blog. He created his own videos. His technology experience began with a PlayStation purchased as a Christmas present. His skill had brought him to an advanced level at which he participated in online tournaments with his friends.

Randall

Randall was into running, skateboarding, music, and cooking. He had a part-time job at a local restaurant. He began skateboarding at an early age. At one point, Randall was sponsored by a neighborhood shop for the purpose of producing promotional videos and photos. Running helped him stay focused on his schoolwork and away from previous temptations. His earliest technology memories involved playing Frogger, a CD-based game, with his parents sitting in close observation. He quickly graduated to a handheld gaming device and later online games. He found that his skating brought balance to his life. He had also learned to respect others, particularly those in positions of authority.

Rachel

In order to stay busy during days off, Rachel's dad got her involved in a knitting group at an alpaca farm. She also played the cello and was involved with a number of fan sites for movies and music. Her first experiences with technology took place in elementary school first and second grade where she played educational games and learned keyboarding. She was a heavy Facebook user enjoying the games in particular. She thought face-to-face interactions with her teachers have a greater impact on her learning than anything she might do online.

Data Collection

Eleven students participated in the 1-hour digitally recorded interview. Two small digital recorders that allowed audio files to be downloaded to my personal computer were used to provide redundancy and reduce the chance of a lost interview due to technological failure. Students were interviewed over a period of two and a half weeks

during late October and early November 2014. A private office within the public charter school was the interview site. To accommodate student schedules, meetings were held immediately after lunch and during study hall periods. Notes detailing impressions about the participants were jotted down after leaving the campus following each interview. Interviewees provided a candid look at their use of social media, use of technology for both formal and informal learning, and how they viewed their technology identities. Some follow-up and clarification questions were asked to refine my understanding of the information provided.

Recordings were transcribed by me using the audio files from the digital recorders and Microsoft Word. Transcription took about 3 hours for each 1-hour recording. The initial plan had been to use Dragon Naturally Speaking Premium for the transcription process. This turned out to be a nonviable solution. The 13.0 version of this software is programmed for voice recognition of the primary user tones. The text of other voices was garbled and the textual transcription was unrecognizable. Initially I attempted a concurrent reading of the recordings. The process proved to be laborious and errors were abundant. The recordings were slowed to half speed and typed transcription into a Microsoft Word document was more successfully accomplished.

Other than the occasional need for a bathroom break on the part of the participants and one phone call there were no other unusual interruptions in the interview process. The transcribed interviews were returned to the participants for final approval and member checking.

Data Analysis

Data from the 11, one-hour, digitally recorded, individual interviews, and later clarifying conversations were transcribed and analyzed. The semi-structured interview process was employed to allow the interviewer the ability to ask questions that built on previous responses probing for detail until saturation of the topic was achieved. Member checking was conducted by reviewing the transcripts with each participant where additional questions were asked for clarification. The additional information was added to the original transcript.

After transcription, data were analyzed to confirm two of Yin's five techniques in the analysis, organization, and interpretation of the data (p. 126-163): pattern matching and explanation building. Themes were also explored to provide correspondence by searching for areas of commonality and repetition (Stake, 1995, p. 78). Manual coding was used for each interview, each research question, and each student group within the questions. A Word document allowed an in depth analysis of the patterns and themes for each student within a group and research question. Direct quotations were matched to each using color coding to help provide an explanation about the case and create inspiration for future research (Yin, 2009, 141). A spreadsheet was created to allow a view of the categories for each group of participants and the correspondence between them. An inductive approach allowed the data to inform the categories (Yin, 2011, p. 94).

Discrepant data were limited in number and described in the results section of this paper. The data were viewed within the context of each participant's interview as well as

in contrast to the other participants in the study. Comparison was used to examine results across the groups (Yin, 2011, p. 79).

Evidence of Trustworthiness

Yin (2009) described four methods used to assure the accuracy and trustworthiness of qualitative research: credibility, transferability, dependability, and confirmability (p. 40). The sections that follow describe how these critical methods were applied in this qualitative case study.

Credibility

The data gathered from each participant was analyzed to present a detailed view of the case. Yin (2011) expressed the need for transparency of data by making results publicly available to all stakeholders (p. 19). To this end research results were shared with the participants, the cooperating public charter school, and Walden University peers. Triangulation was achieved through the use of groups representing the three separate populations of at-risk participants: three students who have dropped out of high school and are thinking about returning, four students who dropped out but returned, and four students considering dropping out (Yin, 2011, pp. 81-82; Yin, 2009, p. 116; Stake, 1995, p. 109). Through participant review of transcripts and follow-up questions, member checking provided verification and clarification of the data (Yin, 2011, p. 97; Yin, 2009, pp. 42-43; Stake, 1995, pp. 115-116).

Transferability

Transferability, or external validity, was established through full and comprehensive descriptions provided by the three groups of participants. Probing

interview questions brought forth data that was both rich and thick (Yin, 2011, 79). Gender and economic circumstances of the students varied; however, ethnic diversity was not represented in this group of participants. All participants but one were Caucasian. Generalizations among other cases in terms of ethnic groups is not advised (Yin, 2009, p. 161). Generalizations among cases within the same age and gender range is possible. Rich descriptions of the themes were provided so another researcher could determine whether these findings are relevant and transferable to their situation.

Dependability

Triangulation was primarily achieved through collection of three separate data points represented by three groups of participants: four who were at-risk of dropping out, four who had dropped out of high school but returned, and three who had dropped out but were considering returning to high school. Member checking with additional clarification questions allowed for deeper understanding of the unique circumstances of each participant. Pattern matching and theme identification brought the data into focus as it related to the research questions. The only threat to the dependability of this study would be the ethnic composition of this case. The ethnic breakdown for other schools in the subject area was consistent with the ethnicity of my participants, but not for most of the schools across the subject state. The impact of this issue on future repetitions of this study is unknown.

Confirmability

An objective stance was maintained by the interviewer throughout this process. Conversations were lively, interesting, and far ranging. A journal was maintained

containing impressions about the participants. Reflexivity (Yin, 2011, p. 150), where the interviewer influences the participant and the participant influences the interviewer, was avoided with prompt transcription of the digital recordings. This allowed me to maintain a research based relationship with the participants through close examination of my interview questioning techniques immediately following each meeting. The procedures used during the interview process have been faithfully described so that any biases or personal feelings could be revealed. The accuracy of the data allowed the conclusions drawn from this study to be judged accordingly.

Results

This case study offered an indication of how a population of at-risk high school students operated within a digitally connected world and how those connections impacted their educational experiences. In particular, information was explored about the creation of a technology identity: the perspectives about technology skills, access or lack of access to technology, the role technology played in their daily lives, and their wish to place technology into their learning at school. Three groups of students participated in the study; those considering dropping out of school, those who dropped out but returned, and those who dropped out and were thinking about returning. The students provided an image of their use of social media, their use of technology for learning in informal settings, their use of technology in a formal school setting, and their technology identity.

Research Question 1

Research Question 1 asked how the development of a technology identity using social media and personal learning networks influence at-risk high school students to

complete diploma requirements. An arrangement of common themes within the case study provided a picture of how they viewed the influence of social media and personal learning networks on their motivation to complete high school. The exploration of unique themes, presented by a group or groups, provided a more detailed picture of the themes drawn from the data. Each participant provided a unique perspective to the questions but common themes and patterns appeared especially in terms of how technology impacts their relationships, networking, and the integration of social media and personal learning networks into their formal educational experiences. The common themes for Research Question 1 included: *transference to learning, relationships with the school community, relationships with personal learning communities and social networks, reconciliation of technology identity,* and *bridging technologies.*

Goode's (2010) approach to technology identity where the individual's perspective about their technology skills, their access or lack of access to technology, their view of the significance of technology in their lives, their desire to place technology into their learning schema, and the blending of elements into the individual's personal belief system guided the examination of this question (p. 498). Current research demonstrated that the development of a technology identity and perspectives about educational opportunities influenced the use of social networking and the formation of personal learning networks (p. 501). The interviews conducted with these 11 students allowed the identification of the themes and supported the integrity of this analysis.

Transference to Learning

A significant element used in the development of a technology identity for the participants in this study was the willingness to place technology into their learning schema. All 11 students were able to describe how they used technology as it related to their interests outside of school. The public charter school they attended had a robust network, school specific Google Drive, Google Chrome, Google Docs, Google eMail accounts for students and staff, two computer labs, two laptop carts, interactive whiteboards with projectors in selected classrooms, and tablet technology for all staff members. The recent move to Google and tablet technologies explained some participant answers regarding the existence of a technology identity at school and their preferences for face-to-face relationships over virtual relationships with staff members.

The first group included Teresa, Talia, Tabitha, and Tanner who all felt they were skilled technology users making good choices about their virtual connections, maintaining their equipment, and being responsible users of social media. These students were considering dropping out of school, but chose to remain to complete their diploma requirements. All felt their smartphones were critical assets to their ability to communicate with friends or family as well as locate information easily and quickly. Tabitha admitted she downloaded pirated music to her cell phone due to budget constraints. Tanner appeared to be more involved with and knowledgeable about the actual hardware and software than the rest of the group.

Describing the ability to find information for their interests and hobbies allowed the participants to make connections between their use of technology at home and at

school. They found parallels to their use of social media, personal learning networks, motivation, perseverance, and learning strategies in both locations. Teresa described how she found information relating to her love of the clarinet.

> If I had a question about the clarinet then I would go to Straight Music because they have people who work with the instruments there and they have people who can help you with any problems and they have a repair shop. It's both a website and a shop.

For her love of flash mob dancing her school based group used the skills they learned through YouTube to look at what other dancers had done and either copy or adapt it to their own style. At some point the group would like to record their own video to post on YouTube for their classmates and the world to see what they have accomplished. A personal learning network had formed within the flash mob interest group that carried over into other activities, interests, and academic pursuits at school. The ability to conduct an effective Web search had allowed Teresa to remain engaged with her classmates and educational studies. This was consistent with Siemens's view that the more connections students are able to make, the more adaptable they become in creating new connections and new adaptations, including the completion of high school diploma requirements (2005, p. 73).

Talia brought her social networking skills to school through her reading. She noticed that after reading articles from band, science, and philosophy groups she followed on the Web she was better able to read articles in class. She stated,

> I already have more experience in reading and the practice helps. The Internet has a big impact on that. There's a lot of things I've learned from the Internet. I feel like almost all of my knowledge is from the Internet. Like what I read from there I remember it better. Kapow! Look at what I learned. It's always great. It's always positive.

Moje, Overby, Tysvaer, and Morris (2008) found that digital habits, as they applied to reading, had a direct influence on learning. Their study closely paralleled research conducted by Greenhow (2008) where reading online in an informal setting had an impact on traditional reading skills (p. 188). The research demonstrated a connection between the ability to read and comprehend content within formal and informal settings and the learning process. Jahnke (2012a) demonstrated that active learners were not just posting and writing, they were also actively reading. The ability to read and articulate the material read with friends and teachers allowed Talia to form stronger bonds with her personal learning network and the people involved in her education. These bonds created a stronger desire for her to be successful in school.

Tabitha described how she learned to find specific music and download it to her phone for free.

> Um, I remember when I got a computer that was the first thing I wanted to do was put music on my phone. I didn't know how to do that. I had to teach myself. I don't remember where I first learned. Everyone just did it. Anyone who had an iPod had illegal music on their iPod. There are tutorials on YouTube. They gave me the steps to go through. I would watch it and it would give me a step and then

> I would perform the step. Then I would go back to the video. I did one-step at a time.

The ability to be self taught using YouTube, Google, and the Web is an ability all 11 of these students displayed with varying levels of motivation. Tabitha demonstrated strong motivation for acquiring music for free. She knew pirating music was not appropriate but she persisted using a step-by-step approach until she was successful. Her enthusiasm was self-directed and focused on achieving a specific goal. When one avenue was unsuccessful she found other routes to reach her objective.

When asked if she brought any of the skills she learned at home about how to find music, how to conduct an effective search, and maintaining persistence into her work at school, she replied,

> Yeah, if I have to research something sometimes. Sometimes you have to be tedious if you're looking up. Sometimes I don't know the words to the songs that I'm looking up so I have to look up an artist and go through all their songs. If I'm researching something I'll have to go to several different website pages before I can find what I'm looking for.

Her ability to remain persistent and motivated demonstrated a movement toward Pink's (2011) concept of mastery where previous successes led to greater skill. Even though she participated in inappropriate conduct using the Web outside of school these same issues were not present in her school searches. She was able to adapt what she taught herself at home to new situations at school (Bingham and Conner, 2010, p. 8). While Tabitha's learning and achievement might have been enhanced if her teachers had guided it, she

demonstrated her ability to be successful with adequate grades to complete her diploma requirements at the time of our meeting. This success motivated her to continue her current strategies for finding information and connecting to her personal learning networks.

Transference of gaming experiences into educational skills had not been established in the literature, but Tanner described how he brought the skills he learned while gaming into his school experiences (Pegrum, 2010). His skills did not involve the use of technology alone. Tanner described how he learned about positive reinforcement and leadership skills through his gaming. He also addressed how interacting with players around the world improved his social skills.

> You learn positive reinforcement. You could be losing and it doesn't do any good to put your teammates down and tell them they're not doing good. You do learn a lot from working together. It's almost like having a team in real life. We try to take it seriously and try to be as good as we can. Yeah, I do take things from that into school. If we're doing a project I'll take some leadership skills about how to get everybody on the same page and talking about the project without making it sound like you're trying to control them. Actually just trying to help everyone to get on the same page and work together looking for their strengths and my own and make connections so the project gets completed.

Tanner learned, "how people talk to each other" and how to "interact with people you've never met." He learned valuable social skills through his interactions with individuals while playing online games that he was able to "translate into real life." One of the most

significant predictors of student success attributed to nonacademic competencies was social interactions (Deke & Haimson, 2006). Tanner described his social interactions as having a very positive effect on his ability to learn, stay motivated, and make connections to his personal learning networks providing him the impetus to stay in school.

The second group, Danica, Dalton, and Debby, had dropped out and were considering returning to school. Danica volunteered with a no kill animal shelter that also trained dogs for the blind and disabled. She liked to read historical fiction and was interested in a career in foreign affairs. Dalton's interests were art, tattoos in particular, and music. He had many family responsibilities that kept him focused on helping at home. Debby had a job at a fast food restaurant that consumed the majority of her free time. She shared that she loved to sleep, play video games, and text all day, every day. All three applied the informal learning skills taken from their social media experiences to their learning in the formal setting. Danica explained how she applied her social media skills to her schoolwork to help condense her responses to short answer questions and to meet restricted length requirements.

> You have to learn to condense things to get your point across. I guess that's kind of helped me particularly last year in history class. My history teacher gave us a lot of short answers. Some of the short answers I wanted to write a whole paragraph on them but it was short answers so we only have a small amount of room to write something in. I already have pretty big handwriting as it is so social media with the limited space and everything definitely helped me learn how to make something get straight to the point.

The ability to produce concentrated responses to short answer questions is an asset for Danica in this situation. She was able to take the skills she had learned using Twitter and Facebook and translate them into complete, concise thought in a formal learning situation. The drawback to an abbreviated response was the lack of reflective and active thinking required in more complex questions. This problem will be explored in more depth in Chapter 5.

Google was the preferred search engine for all 11 participants. Dalton explained why he favored Google or YouTube for learning how to play pieces of guitar music and how that skill translated to his work in the classroom.

> Google is the way to go for me. Google or YouTube. You have somebody explain it to you rather than reading it. Some days I'll have a hard time paying attention to what somebody is trying to tell me. I'll have to visually look at it and look at an example. I do it step by step. I'll do it over and over again so it I get it locked in my head. I don't know if it's with everybody but something just clicks in my head once I have heard it a couple of times. If I don't I'll totally forget it for some reason. I have to have it in small steps. I might have to go back a couple of steps and redo those so that I make sure I remember it. I will have to ask questions. I try to break it down by myself first. That's the kind of person I am. I usually have a really hard attention span whenever somebody says something. That's why I use the tabs and YouTube because if I don't get what that person is saying I can look at the tabs and get a better idea. A written example and somebody doing it. Watching somebody do it as an example helps a lot. So much better. I go back

> and see if I can, if I have a worksheet and I got it all finished, I'll go back and double check it. If it's all right I'll still go back through it and I'll kind of redo it all to make sure I get it even faster that time so it clicks in my brain better and easier for me. Repetitiveness isn't fun but it just helps me a lot.

The capacity to go at his own pace, repeat instructions over and over until they "lock" in his head, and break instructions down into steps he could understand was critical to Dalton's success with his music, amplifier building, and schoolwork. He had taught himself how to be successful learning at home and translated those lessons into his formal education. His determination and resolve were demonstrated through his willingness to go over papers repeatedly until he was sure they were completed to the best of his ability. Dalton's tenacity was what brought him back to school to complete his diploma requirements.

Homework was another area where Google played a role in successful learning. Some participants preferred instant or text messaging with classmates to determine how to tackle assignments. Debby preferred to use Google relating her strategies for playing video games to how she found approaches for homework.

> Say I have homework that I can't figure out I'll Google how to do it. Like I do for the video games. Sometimes there's videos if I feel like I really need to see it happen so that I can learn it. Last year I was in Algebra II. It was really hard sometimes to do my homework. If I wasn't there one day I have to see it step by step. I would Google the type of math problem I need help with. Videos pop-up

first and if I see a video and I feel like I need that much help I'll click on the video.

Debby was able to find alternative methods for solving her homework and classwork problems by using YouTube videos. "Well, when you don't understand something the first time sometimes the best way to do it is to look at it in a different perspective." The videos presented strategies her teachers had not shared but were effective for her preferred learning style. She was able to watch them all the way through, step-by-step, or to the point where she grasped the content. When asked if she had ever considered sharing her approaches with her classmates she replied, "It might help them but I don't really want to do that." It is unknown if her attitude had changed once she began attending her new school but her attitude toward sharing her grades with her grandmother might provide some insight. "I'll show her my grades. That's all she needs to know. As long as my grades are good I don't think she knows how I got there." Pink (2011) emphasized that students must see themselves as a part of a school community, a caring classroom, and an educational team. Debby's ability to find her own resources for achievement in school coupled with small class sizes and a more engaged personal learning network could lead to the successful completion of her high school requirements.

The third group, Ryan, Ralph, Randall, and Rachel, had dropped out of school but returned to complete their diploma requirements. They described themselves as skilled users of technology being cautious about their connections in the virtual world and respectful of their smartphones, computers, laptops, tablets, and gaming systems. This

group of students had a broad range of interests outside of school ranging from scuba diving to knitting. Ralph, an avid skateboarder, described how he and his uncle used the Web to find plans for a half pipe for his skateboard.

> I built a half pipe last month in my garage. My uncle helped with the dimensions and all that. It was really confusing trying to get the vertical right. For this I looked around online to find the right dimensions. We found a program for just building ramps but we had to find one to build a half pipe. We did a Google search. It was pretty far into the search. We had to go through lots and lots of pages. We tried a bunch of different stuff. We were looking on the websites to find the most detailed one. We didn't want one that said just do this, just do this, just do this and have us just be lost. We tried to find the most detailed program we could find so we would know exactly what we were doing. We didn't want to spend all this money and just mess up. There were many good ideas but they weren't quite what we wanted. They were all to build a specific one and we did not want what they wanted. We wanted to go off our own opinion. In the program you could adjust the measurements for what you wanted. It would tell us what, what….. It would tell us what would be rideable and what would not be rideable. It told us how much wood we were going to need and what kind.

He was positive this process translated into his schoolwork.

> Oh, yes, totally! Say I am doing a report I want to look for something and I really want to get good information and not something that is totally made up. I want to be able to say or write whatever I want and I want it to be the right facts. Gaming

> helped my schoolwork a lot. I mostly play team related games so when we play I try to plan out; these people are this kind of people. What could we do to counteract whatever they are doing? It gave me a lot more common sense. There are some games that are totally ridiculous and random. Some games that are based on real life stuff you survive and try to do what you can. A lot of the stuff you can relate. A lot of the games go back into history. Some games you go through Leonardo Di Vinci times and all that. You find out stuff. This one called Assassin's Creed where you're an assassin and assassinate people. If you look it up every single person who dies in the game……Every person who dies in the game is a real thing in history that happened, are real people. The quotes they use are real quotes that have been written down. That's helped me in history amazingly.

Ralph learned how to conduct a deep search for information suiting the needs of a specific situation, like the half pipe. This skill had translated into his work in the classroom through his tenacity in searching for correct information, anchoring, but also forming teams of people who could collaborate on projects or work together to solve problems, connecting. These attributes along with a renewed interest in history have helped Ralph remain positive about school and his ability to complete his diploma requirements.

In contrast Ryan felt his gaming did little to enhance his ability to learn with one exception.

> Not at all. Actually there is lots of these where it helps with quick thinking and split second decisions that I can agree with. A lot of it helps with the way you think. That's really it. Quick thinking. You can make faster decisions. There are a lot of puzzles that you can figure out more logically. I think that would be a good word for it. I use them with everyday challenges that I meet. It is more like subconscious stuff.

While Ryan saw little connection between his use of technology outside and inside the school setting, he did point to one of Seimens (2005) eight principles of connectivism, the ability to make decisions, which are part of the learning process (p. 7). The ability of an individual to recognize the impact new knowledge has on events or the decisions that follow is critical to knowledge acquisition and creates the connections to past and future learning. The fact that quick and logical thinking have become innate for Ryan will allow him to scaffold his learning more effectively and continue his success in the classroom.

Randall found a connection between the way he learned skateboarding tricks on YouTube and his ability to remain composed and respectful.

> Just hanging out with my friends at the skate park a lot and skating is pretty much my whole life. Somehow skateboarding has taught me great balance and to be respectful with other people. Just the countless events that happened like getting pulled over a lot for skating in the middle of the road in *a small city nearby* because it's illegal to skate unless you're 100 yards outside the city limits. I've talked to the cops a lot and I've learned to be respectful a lot. I've learned to be respectful of people in higher authority. Whenever you commit to a trick in

> skateboarding, it's like learning; you really have to commit to learning. In skateboarding you can't just immediately do these tricks that you see these people doing. You have to learn them step-by-step. Try it out a little bit. If you don't get it just keep doing it and eventually you'll be successful.

Randall's intrinsic motivation to work on a skateboarding trick until it is perfected translates into the classroom through his willingness to commit to his work, proceed step-by-step to achieve the desired outcome, and make corrections until he is successful. Like Tanner, Randall demonstrated success afforded by the nonacademic competencies of composure and respect for authority. These attributes allowed Randall to approach his teachers easily when additional assistance was required. It also allowed him to maintain a strong relationship with his personal learning network and his work associates.

Rachel related her experiences of using YouTube to refresh her knitting skills support her cello playing to her educational efforts.

> I guess with the knitting it teaches you how to focus because you have to make sure everything is intact, you know what you're doing. I feel like that trains your mind into saying you're doing this, this is how you do it. Step by step. With the cello, I'm not entirely sure how to incorporate it with school. It did help me with sports because I was playing volleyball at the time. I could never do an overhand serve. After I started playing the cello I built up muscle. I was using my dominate hand but I because I always had my arm up holding the bow built up muscle. One day we had to practice our overhand serves and I was finally able to just serve it over the net. If I have an assignment and I have no idea what I'm doing I'll look it

up. I mostly go to Google for it. They have websites and how-to or just videos.

Ranging from there I try to find something that makes me understand it if I don't.

Being able to create a personal understanding of how to knit, play the cello, or find answers to questions in school allowed Rachel to create connections to subject matter experts, differentiate content based on her needs, and reach across a virtual space to gain knowledge, understanding, and expertise. Her ability to see how unintended consequences can impact learning, playing the cello had an impact on volleyball success, may lead toward her continued success in school.

The 11 participants in this study all demonstrated their desire to place technology into their learning schema as Goode (2010) suggested. Based on my 1-hour interview with each student, it appeared technology had blended into their personal belief system and had become an integral part of his or her lives at home and at school. All of the participants were able to describe in detail how they used technology to access information within their areas of interest. Siemens (2005) described learning as both external or networked and as internal or neural. Both types of learning are connections created through the recognition of patterns of understanding (p. 29). The participants easily described their effective searching techniques as well as their connections to networks of people within the context of formal learning in the classroom. These were skills they taught themselves outside of school. YouTube and Google were the preferred venues for finding and learning how to accomplish their personal learning objectives. Siemens found the more connections people are able to make, the more adaptable they become in creating new connections and new adaptations (p. 73). Supporting the use of

social networks for both formal and informal learning opportunities was a practical solution to strengthen the motivation to remain in school and complete their diploma requirements.

Transference to learning did not involve the technology alone. Tanner described how he learned about positive reinforcement and leadership skills through his gaming. He also addressed how interacting with players around the world improved his social skills. Ralph shared similar views about the maturation of his social skills in addition to growth in the area of common sense and working on teams. Randall felt he had learned to respect people in authority and how to commit to a task until it was mastered. Deke and Haimson (2006) found that the most significant predictor of student success toward earning a high school diploma was attributed to nonacademic competencies similar to the ones the participants shared including work habits, sports, leadership, social interactions, and a feeling they are in charge of their own destiny.

Relationships With Personal Learning Communities and Social Networks

Gobble (2012) demonstrated employing social media and personal learning networks increased both motivation and a higher level of success. Maccoby (2010), Nordgren (2013), and Parker (2012) included the factor of educational success when these two tools implemented. Both motivation and educational success led to a sense of responsibility to learn, improved relationships with those involved in the educational experience, rewards for positive outcomes, and a reason to work toward their ultimate goal of earning a high school diploma.

The 11 students in this study had access to a variety of social media outlets and personal learning networks at home including Facebook, Snapchat, Instagram, Skype, and Tumblr. These contacts bridged into the school setting through the use of smartphones. This is consistent with research completed by Bingham and Conner (2010) that indicated the creation of an appropriate technology identity within an integrated format of social media and face-to-face interactions created a stronger connection to teachers and educational professionals, higher satisfaction with the learning process, increased motivation, and a stronger sense of identity outside the virtual world (p. 6). A snapshot of the technology identity for the participants in this study provided insight into their ability to use social networking and personal learning networks to create educational opportunities leading to success in the quest to complete diploma requirements. Goode's (2010) research demonstrated that the development of a technology identity and perspectives about educational opportunities influenced the use of social networking and the formation of personal learning networks (p. 501).

The four members of group 1 indicated that Facebook was not currently their primary form of social media. Tabitha had deleted her Facebook account because she began to feel "uncomfortable that people could access me so easily." The others either tired of Facebook or grew to prefer other media like Snapchat. Tanner was the only one in this group with an anonymous profile for his gaming site, Steam. He played with anonymous friends that he knew only virtually. All participants limited access of their social media to friends and family with this one exception. The majority of friends on social media were also friends in the face-to-face world. Talia, Tabitha, and Tanner

favored Snapchat due to its privacy. Messages in Snapchat disappear after a short period of time. The ability to connect with groups around the world without providing personal information was an advantage to privacy according to the participants.

The public charter school used in this study moved to the Google for Education platform. They had created a school based Google Drive where students could generate assignments and easily share directly with teachers. All students and staff had Gmail accounts that allowed them to easily contact one another, however, according to Teresa the school email is strictly for student-to-teacher and teacher-to-student interactions. Student-to-student email using the school Gmail was forbidden.

> Email is for the students and the teachers to talk back and forth. Students cannot share emails with other students. I'm fine with not being able to share stuff with other students but it is kind of a drawback because I am in journalism and we're supposed to email or share all of our stuff with the other students. So we had to make separate email accounts from the school email accounts and from our personal email accounts if we didn't already have a Gmail account and it was ridiculous.

Restricting email access created a problem with idea sharing and open communication between members of the journalism class as well as other collaborative assignments. Google Drive allowed access to shared projects between students but final submissions went only to teachers negating the ability for peer review. This stifling of rapid and integrated learning prevented engagement, collaboration, problem solving, brainstorming, synchronous communication, content control, and flexibility, attributes that lead to

learning and achievement. To work around the restrictions students met face-to-face or they communicated using other social media interfaces available on their smartphones like text messaging, instant messaging, or Skype.

Jin (2013) found the formation of a digital identity encouraged "self-motivation, self-expression, and self-development" (p. 461). This group of participants reported having a technology identity within their informal learning networks but not within their formal, school-based network. All four students in the first group of students who were considering dropping out reported there was the possibility to establish a technology profile within the Google platform but to their knowledge no one had done so. Tanner explained why.

> If there were a school specific social media that was interesting and attractive to kids to go to because they could talk to each other then I would have my own identity on there. It's like Facebook but with Google. I don't really use that. I don't know anybody who uses that. I think it's just because of all the other social media that's more popular. People just use those more.

Teresa thought a blog within the school Google platform might help because, "One, it could help other people get involved in that stuff. Two, we might be able to see what other people are interested in and make new groups. There, we could share ideas." Both these quotes spoke to the desire to be connected for the purpose of creating stronger relationships, knowledge acquisition, and involvement using tools that were familiar to the students. This confirms the findings of Steinfield et al. (2008) that the building of visible connections increased social capital across networks (p. 442) and Greenhow and

Burton (2011) that social capital was tied to improved grade points, completion of diploma requirements, and attitudes toward education in general, including motivation and identity (p. 226).

When asked if they viewed their technology identity from home as being any different from their technology identity at school all four said they felt they were the same. Tabitha said, "I like to think that I don't really have an online identity too separate from my real life identity. No, I don't think I do." The creation of an appropriate technology identity within an integrated format of social media, personal learning networks, and face-to-face interactions created a stronger connection to support groups, educational professionals, higher satisfaction with the learning process, increased motivation, and a stronger sense of identity outside the virtual world.

In contrast to the first group the second group of students who had dropped out of school and were considering returning used a variety of social media but concentrated on Facebook. For Danica and Debby that concentration became an addiction. Danica continued her Facebook page but in a much more restricted way.

> Eventually like on Facebook it gets old. Also it was when I was younger I was very immature so you get as you get older you get wiser about things. Now that I look back on it I realize that what I was doing was wrong and it wasn't safe and it wasn't real. It was a virtual reality I was creating for myself when I should've been working on creating a reality I wanted to be in. A reality I wanted to enjoy my real life instead of creating one there. Right now I feel like it's a little bit of a waste of time because it's becoming a competition in a way with people getting so

> obsessed with getting followers on Instagram, Vine, and Twitter. You just spent so much time on technology you're wasting time in your real life when you could be getting real experiences like life-changing experiences. People are just so obsessed with the technology nowadays instead of being out in nature and enjoying it.

Only Debby continued to use Facebook particularly for its instant messaging features. She saw it as more of a break that she allowed herself when it became difficult to focus on the tasks at hand.

> Taking a second to text someone back is a great break from my work. I'll check my phone when I feel like it. I don't feel like I have to answer a message the minute it comes in. I keep my phone on silent. I check my phone every once in a while. When I feel like I can't focus anymore and there's no point at just staring at my paper I'll just do it and then alright I'm ready.

All three used Facebook strictly for family and friends. Dalton used Facebook to maintain a connection to his family residing in another state. Strong connections to family and friends created the desire to achieve, remain engaged in the educational process, and enhanced the desire to complete diploma requirements. Debby admitted she spent an hour and a half to two hours daily responding to messages and checking her feed. The addictive nature of any social media platform can serve as a barrier to learning.

YouTube served as a learning portal for two members of this group. Dalton used YouTube to learn how to build guitar amplifiers and how to play specific songs on his electric guitar. Debby used YouTube to find walkthrough instructions to help with her

gaming. Danica used Snapchat, Instagram, and Vine to find pictures and watch videos. All three participants currently have technology identities that reflect themselves. This finding differed from the research of Luppicini and Barber (2013) that indicated 58% of participants described their online and offline identities as being different.

None of them had anonymous identities at the time of our interview. Danica explained her home and school technology identities as "I think it's just the same because nothing really I do everything I do here at home, too." Dalton explained his willingness to share his profile so freely. "Well, that's actually a really good question. I just haven't really felt worried about it. I can protect myself pretty well." When asked about using the webcam for Skype conversations, however, he shared, "I'm weird about that. That is one thing that I will protect myself from, having a camera on my computer. You never know when that can be turned on. It's taped up. Something completely over it." All three participants operated comfortably within their personal learning and social networks. They did not feel the need to hide who they were. The willingness to provide a transparent technology identity gave them a feeling of independence, control over their decisions, and increased social capital. Since this group had recently chosen to return to school it remains to be seen if these qualities will lead to improved grades and a completion of diploma requirements.

The third group, those who had returned to school after dropping out also had access to a wide variety of social media at home and through their smartphones at school. None of the male participants engaged in Facebook to any extent preferring YouTube,

Skype, and gaming or what Ryan called "new age sports." When asked if he felt gaming was a form of social media, Ryan responded.

> I guess it could be. This ties into what I was saying. To me games and stuff like that is a way to hang out with your friends. My friend group at school is also my group on the Internet so whenever I'm playing games with them I'm hanging out with them. It is just another way to hang out with your friends. Having fun with your friends.

Ryan's technology identity, based on the social network, was established through his new age sports venues. He included physical hangouts, the bleachers and other meeting areas at school, to create connections but outside of school he relied on virtual settings to maintain connections with his friends and family. These cyberplaces became an area where Ryan and his classmates met to establish a social identity and status among their peers. Similar venues could be used to support students in their educational endeavors through online tutoring, just-in-time interventions, virtual connections with parents, teachers, and support staff.

Rachel used Facebook up to three hours a day. She described her experience, particularly in the area of games hosted by Facebook, as addictive. "Yes. I get on it quite a lot. I would use all the chatting to talk with my friends. Then I found there were games on Facebook. There is this one game that I got really addicted to." She also used Facebook to stay in touch with friends and follow her interests. "I look at a lot of pages. I like scrolling through. When I see something that interests me I'll click it and read the article. Normally they're about movies or the Civil War." She used YouTube to find

instructional videos to help with her knitting and her Instagram account to post pictures of her completed projects. Rachel's social media connections provided her with peer relationships that benefited her both educationally and psychologically.

YouTube was the media of choice for all the participants in this group. Motivation, self-directed learning, and a sense of community allowed this group to reach a conative level of learning where their skills were repeatedly practiced toward the creation of a product or action. Ralph described his YouTube channel. "It's about personal life. They're personal life experiences. If people contact me if something is wrong, I can help explain it to them somehow. Most of the time that's personal and I'll talk to them. Basically I help people." He maintained his own blog where he responded to questions from other students presumably near his age that he did not know.

> Anybody can either try to contact me, ask me a question, anything. If people need help they can come to me. I've had people…I've actually personally had somebody ask me how should they come out of the closet to someone. I tried to help explain as best I could. I tried to explain to him I've never personally had that problem so I don't quite know what to do. I gave him some websites where people talk about it. I talked to a friend who personally had to do it. We tried to help him out and he eventually did it. He messaged me saying thank you. I feel much better that I did it.

In this case a level of anonymity allowed the poster to gain information, avoid embarrassment, and connect with other individuals who were experiencing similar issues. Ralph used his skills to create trust and build community. Ralph directed the poster to

valuable resources and peers building a group of concerned virtual relationships to support and guide him. Virtual mentoring provided Ralph with the ability to relate to other students for motivation and social connection in his quest to complete his diploma requirements.

Ralph was one of two participants in this group who maintained an anonymous technology identity. Ralph did not wish to "gloat" about his accomplishments. He provided his reasoning for keeping his technology identity separate from his personal identity.

> I keep my online personality and my personal one separate. I try not to bring people into it because some people will go, "Oh, you're this person." No, I'm not that person. Only some people know about my YouTube page. I have my own unique logo. I use it as my image so if you were to look it up every single video that I have, I have it in the corner of the videos. And pretty much anything else on the page. When I first started it was really small. I didn't want to be embarrassed because of my YouTube channel. Now it has grown really fast. I'm at the point people don't know now so I don't feel like telling people. Pretty much only my close friends and people involved in the channel know about it.

Randall also maintained an anonymous identity on Instagram posting skating pictures for his 1,600 followers. He had altered his privacy settings on Facebook restricting access to known friends only.

> Yeah, just so that people couldn't track me. I don't know. I made a Facebook for about a year and a half. I put my actual phone number. I didn't put my address but

> I put my email and all that stuff. I changed the privacy settings. Now only people who are friends with me can see me. There's a lot of weird people on the Internet. I found it out by accepting a friend request from a porn site. They sent me a message on Facebook saying, "Hey, my name is blah, blah, blah and this is my website." I clicked on it and it sent me to some credit card thing. I was like, they're just trying to scam my money. I didn't know what was going on. So I deleted her and everybody that I didn't know.

The anonymous and guarded nature of these two participants revealed their need for control, freedom, and secrecy. These are seen as positives allowing users to create a technology identity that is purpose dependent and altered to fit the digital space or activity. They can define their identity, edit it, and redefine it at will. Persistence, searchability, replicability, and invisible audiences, boyd's (2007) four factors of an online identity, played a role in the choices made by these two users.

All four participants used Google Drive and Google Chrome at school but had not established a technology identity at school. When asked if she could compare her technology identity from home to her technology identity at school, Rachel described it this way.

> That's an interesting question. I think it differs considering that most social medias are all blocked here. It's a separation with the social identity because at home I can do whatever I want but here it is restricted. They want to make it school related here. I understand that because they don't want kids being on their

profiles. They want to separate your social life through technology separate from school.

Social media and personal learning networks at home consisted of Facebook, Snapchat, Instagram, Skype, and Tumblr. All participants used Facebook but it was not their primary form of social media with the exception of Debby and Rachel who reported their use as bordering on an addiction. The others have moved beyond Facebook or have other outlets to create connections through their gaming or interests. Snapchat is preferred by five of the participants for its privacy, ability to message, share images, create unique drawings, and their feeling that messages disappear. The ability to form connections through a network is the definition of Connectivism as described by Siemens (2006, p. 29). His four traits of connective knowledge: diversity, autonomy, interactivity, and openness, were well demonstrated by this group of participants (p. 16). He also found that a technology identity provided the opportunity to form personal learning networks for the purpose of "collaboration, socialization, and doing things together" (p.72) something all of these students recognized.

Luppicini and Moir (2013) found using information and communication technologies (ICT) like Skype, Facetime, and instant messaging were helpful for maintaining a sense of relationship and connection particularly with familial groups at extended distances although the applications lacked the same level of intimacy provided by face-to-face communication. Instant messaging, text messaging, and Skype played a role in the personal connections for all of the participants. Seven of the 11 indicated they spent 2-hours or more throughout the day responding to messages, posting pictures, or

communicating through Skype. Skype or other game based audio applications were used to maintain spoken relationships with family members, friends, and fellow gamers. Ito (2010) described two online groups: *friendship-driven* and *interest-driven*. Friendship-driven connections typically included relationships already established through face-to-face relationships and were comprised of social networking applications like Facebook, instant messaging, or playing online participatory video games. Activities might include "chatting or flirting; uploading, downloading, or discussing music, images, and video; updating profiles and writing on friends' walls; and playing or discussing games" (p. 122). The participants in this study modeled this finding exactly. Their technology identities as represented by their social media and personal learning networks and their face-to-face interactions with the public charter school staff had a direct influence on their willingness to maintain grades, attend class, collaborate with peers, communicate with friends, parents, and teachers, and complete the requirements needed to obtain their high school diploma.

Relationships With the School Community

Motivation, connections, engagement, and social learning were crucial considerations in determining the influences and perceptions for the populations of at-risk high school students participating in this study. As Dabbagh & Kitsantas (2012) indicated social media acted as a channel for "communication, collaboration, and creative expression" (p. 1). For the students in this study, social media included collaborative spaces for work and play, media sharing, social networking sites, and web-based office tools rather than making virtual connections with teachers and educational professionals.

Bingham and Conner (2010) addressed the creation of an appropriate technology identity within an integrated format of social media and face-to-face interactions created a stronger connection to teachers and educational professionals, higher satisfaction with the learning process, increased motivation, and a stronger sense of identity outside the virtual world (p. 6). All these factors had a positive influence on student ability to complete the requirements needed to obtain a high school diploma. At the time of these interviews, email and Google Drive were the only technology-based connections available for students to contact and connect with their teachers. All 11 participants felt comfortable emailing their teachers with questions about assignments, forgotten information, or requests for extensions.

All of the students felt their face-to-face relationships with the teachers of the public charter school were critical to their educational success and the final achievement of earning their diploma. They felt small class sizes of no more than 11 students, personalized attention on a weekly basis with their counselor, and weekly meetings as a grade level all played a role in their ability to stay motivated and continue moving toward their goal of achieving their diploma. Teresa characterized the importance this way.

> At my last school, it was a horrible school. I went to a private school or a private military Baptist school so this is a very different environment. The teachers there treated us like we were animals. Here it's free and the teachers and students have better relationships and they’re happier together. It makes the students want to hear more and learn more.

Teresa's quote supported Pink's (2011) concept of motivation and the three contributing factors of autonomy, mastery, and purpose. Sustaining the ability of students to understand how motivation influenced their perceptions of the effort needed to succeed in both formal and informal educational opportunities is a superior indicator for success (Duckworth, 2013, p. 2).

Talia attended online classes in middle school and was a heavy computer user during that period. Communication with teachers and peers during that time was almost entirely typing. She lacked the face-to-face connection needed to help her create a strong relationship to her teachers, gain satisfaction from learning, and be more motivated. Rather than taking her social identity into the real world she retreated deeper into the virtual world.

> There were times in my life where I typed way more than I talked. For months on end I was just so lonely in my room. I was really good at my schoolwork and would get it done really fast. I just ripped through it and when I was done I was bored and needed something else to do. I needed somebody to talk to.

This led her to establish a personal learning network of peers on Tumblr. Half her day was spent completing schoolwork and the other half was spent online with her virtual friends. Her situation changed dramatically when she began attending the public charter school.

> It is really awesome here. They are like my friends and my family. I have a good connection with them. I actually learn from them. I get along with them a lot

> better. Even my fellow classmates, I don't want to sound conceited, but know I'm popular. I know I have a good presence here and I really like that.

When asked if the relationships influenced her to stay in school she replied, "Yeah, definitely." The connectedness she experienced in the public charter school gave her a stronger sense of identity outside the virtual world leading to elevated satisfaction with her educational pursuits and an increased motivation to succeed. She tapered her Tumblr activity to four or five friends she knew in person and became more involved in activities with her family, friends, and school contacts.

Tabitha described her relationship with teachers as "straight forward" while noting the only improvement she might recommend was:

> My main problem with the teachers is they need to realize that everyday I'm different. Some days I'm on top of the world and some days I'm not feeling it. We should have emotion gauges. Maybe I could design an app for that.

Emotional attachments gained through face-to-face interactions were a significant factor in relationships between students, their friends, family, and teachers. When students understood that teachers were interested in their well-being, their achievement, and their personal lives, they felt more supported, motivated, and satisfied with their efforts toward completing their diploma requirements. Danica expressed it this way.

> When you have a small school like this you really can't skate by undetected with failing. When you have teachers who try really hard you want to help them because you want to keep this good teacher here to help other students. There comes a point where kids don't do their work even a good teacher can get fed up

> and quit. We have meetings every two weeks. But we have a mentor who looks after us named *mentor's name*. He meets with us on a daily basis to make sure you're making progress.

Dalton felt, "I probably wouldn't switch anything. It's just so easy. If they, I'm trying to figure out a way to put this. It's all pretty much set up really nicely. I just can't think of something that would make it better." Debby felt there was nothing she would change about her relationship with her teachers. If there was something she did not understand she would use Google. "If I didn't learn it the way they teach it the first time I obviously need a different way to approach it. I don't feel like I need their help that much. There's always Google." Face-to-face connections with mentors created a collaborative network that was fundamental to student success and motivation. Sharing grades, progress, and concerns as a group and individually allowed the students to feel supported and acknowledged for their effort or warned of their lack of effort. A culture of participation evolved that built a sense of investment in their school community allowing them to remain engaged and validated while working toward their educational goals of earning a high school diploma.

While most of the students felt their face-to-face relationships with teachers and educational professionals were all they needed, three of the students felt they could work harder to improve their connections. When asked how she could improve her relationships with her teachers Danica replied:

> I could become a better student. I could motivate myself more. I think my relationship would skyrocket. I'm respectful. I'm a very respectful person. My

> problem is just doing the work most of the time. I feel better when I communicate with teachers face-to-face.

Ralph provided strong reasoning about why his teachers were such a positive influence on him staying in school.

> I used to just hate school. I wanted to be through it fast as possible. I didn't really care if I dropped out. My father dropped out of high school. My uncle dropped out of high school. My aunt dropped out of high school. My mom dropped out of high school. I was pretty much the only one who was going through it. I was at the point where I just didn't care. I ended up getting kicked out so I came out here. Out here I realized how much the world is changing and you pretty much need to have a high school diploma and a college education. Once I actually started trying I got more interested in school. Getting kicked out of my old school it was either go to one of those last chance school where you've just been kicked out, none of the other schools want you so you can go here. I didn't really want to go because that doesn't really look good. I dropped out of that and living where I was the home situation wasn't good so I came out here. When I came out here I tried to get in school but they tried to make me a freshman at 17. I did not want to be a freshman. I was not in high school. I wanted to do GED but it was not in session at the time. I had applied to *this school* when I first moved here. They had an open spot where I could have come if I wanted to, so I decided to give it another shot rather than doing GED because GED is supposed to be harder. The teachers are more involved than the other schools. They didn't make me a

> freshman. They were able to work out some of my credits that didn't transfer. They are more concerned with helping the person.

Randall felt his personal relationships with the librarian and the yoga teacher who got him into running were what kept him in school and helped deal with personal issues outside of school. He described the librarian.

> Mr. G. Are you familiar with him? He's the librarian here. He just really chills the students like students can go talk to him about everything and anything. I can sit down with him and talk to him about problems and questions. He was the librarian and they made him the student counselor recently. I think the relationship with my teachers is just fine.

The caring nature of the mentors, educational professionals, and teachers of the subject charter school coupled with small class size, regular progress checks, access to counseling, tutoring, credit recovery, and appropriate assessment allowed the students to feel connected and comfortable with the educational experience. They were encouraged to make the effort to succeed and when they were not trying their best they were called to task. All of them functioned in the connected world outside of school, but when it came to their education they preferred the in person contact. A face-to-face connection had real benefits for the students in this study. They were able to create strong relationships with their teachers, counselors, mentor, and other staff members. The relationships kept them motivated, gave them a stronger sense of personal identity, and increased satisfaction with the educational process needed to complete their diploma requirements.

While email and Google Drive were tangential to their face-to-face link, these two technologies played a part in the ability of the participants to stay connected, participate in collaborative projects, and find answers to their questions. It is unknown if an increased social media presence might increase these elements, but several of the participants had suggestions for how to improve their technological connection to those interested in their educational endeavors. Tanner had a suggestion to improve communication between students and teachers beyond the current formats.

> I think it would be cool to get help from them outside of school. If I were stuck on a problem I could whip out my phone and text or message them. That would be really cool. Maybe even send them a picture of the problem I'm working on. They could be, "Oh, this is how you do that" or "Start out like this." That would be really cool. It could even be assignment specific. The teacher could post something like that. Students could post that they need help on that problem, too. Then maybe students could get together and help each other too virtually rather than face-to-face like we do in the forum of the game I play.

Ryan used Skype at home to connect with family, friends, and fellow gamers. He wondered if this type of access would be helpful in a more rapid response to his questions and concerns.

> That would be helpful. That would be easy access. You don't have to get their phone number, call them, leave them a voice mail or text if they don't respond. It is all right there. You can just message them and if they are there they can message you right back or message you later. It would be helpful.

Ralph had this suggestion taken from his experiences at another public high school.

> In my old school we use to have their number but it wasn't like their real number it was like a Google number. You could text and call them. If someone tried to prank call them they can cancel that number and only give their number to only certain people. We used that because there were a lot of times where I was sick or couldn't make it to school or I did not get the homework. I could text or call them to explain what was going on and was there any way I could make up the work and what is the work that I owe.

As Jahnke (2012a) found these possible interventions coupled with an already strong face-to-face relationship support could provide a broader social context for their educational efforts aimed at earning their high school diploma (p. 61). The students had the desire to create limited virtual connections with their teachers to have their questions answered quickly. These would be interest driven relationships where the students would be able to extend their daily associations beyond the classroom.

Kenny, Walsh-Blair, Blustein, Bempexhat, and Seltzer (2010) and Pink (2011) found that nonacademic factors including an expectation of success, a positive perspective for the future, mastery, and a sense of autonomy were strong indicators for student accomplishment. Face-to-face interactions carried strong emotional and motivational attachments particularly for the participants in this study. Their technological connections to teachers and staff at school were limited to email and Google Drive for the submission of assignments. All the participants felt comfortable emailing their teachers about missing work, late assignments, clarification, or absences.

Eight of the 11 felt their connection to teachers did not need to be altered. Three students, Tanner, Ryan, and Ralph, felt that texting, Skyping, Google Voice, instant messaging, a wiki, blog, or a Ning would be an asset to their educational experience and motivation.

The interviews focused on identifying the creation of a technology identity that allowed at-risk students to create connections beyond their family and face-to-face relationships that lead a broader social context for their educational efforts and successes. The research indicated the creation of an appropriate technology identity within an integrated format of social media and face-to-face interactions created a stronger connection to teachers and educational professionals, higher satisfaction with the learning process, increased motivation, and a stronger sense of identity outside the virtual world.

The participants in this study did not create a strong technology identity within the school setting. Rather they relied on a face-to-face connection within a small group setting and a weak connection through the use of email and Google Drive. This contrasts with their robust and varied technology identities outside of school. However, all of them pointed out that they used the same technology at school and at home, the smartphone, to accomplish both informal and formal learning tasks. Two participants, Danica and Tabitha expressed the fact that their technology identities at home and at school were identical. Employing a bridging technology, the smartphone, allowed them to maintain their technology identity at home and at school. Continuous connection to their social media, personal learning networks, and those involved in their educational efforts had a direct and positive influence on their ability to achieve learning success, maintain

motivation, demonstrate a strong sense of identity in both the face-to-face and virtual worlds, and make strides toward earning their high school diploma.

Bridging Technologies

The latest Pew Research Center (Madden et al., 2013) study of cell phone use by teens aged 12 to 17 found that 78% had cell phones and 47% of those were smartphones. The group of 11 participants in this study all had smartphones, either Android or iPhone. Graham (2010) found that smartphone and tablet technologies narrowed digital inequality allowing users the ability to establish digitally based personal learning networks by easily maintaining connections with their social networks. The ability to use smartphones in any location with access to a satellite signal coupled with the latest unlimited voice, text, and data plans created unrestricted access for this group of participants. The only constraints placed on their cell phone use were during lectures and even then some teachers allowed cell phone use for the purpose of taking polls or recording the lecture. The participants could access a variety of knowledge support tools to create a specialized learning path unique to each user similar to the findings reported by Squire and Dikkers (2012, p. 447). These features allowed the individuals to tailor learning to their technology identity and customize their experience. It also allowed them access to their teachers, personal learning networks, and family. The smartphone served as a technological bridge between their informal and formal learning networks allowing the participants to easily bring their communication, information gathering, and networking skills into the formal learning setting.

All four members of the first group: Teresa, Talia, Tabitha, and Tanner, had access to smartphone technologies through either an iPhone or an android device. Applying Kolb's (1984) experiential learning cycle to their interests and hobbies outside of school found that all of them used Google and YouTube extensively to support their informal learning efforts related to those areas. When asked to explain how he used his smartphone to find information, Tanner provided this explanation.

> It's funny how you can Google almost everything now days. If somebody doesn't know something you can just look it up on Google. The information is at your fingertips. I'll go to websites I've been to before. Sometimes I'll just go to random ones hoping that I'll find something like a good article or something that is reliable and has good references.

Access to the school network was highly restricted leading students to rely on their smartphones for access to their favorite websites and searching resources. Tanner explained, "We have gmail but nobody really communicates through that at school. They use the other social medias to talk to each other while they're in school." When questioned about which technology they used more their smartphone, computer, laptop, or tablet, all four replied they used their smartphone almost exclusively particularly when they were in school. Connections to their personal learning networks and more familiar digital information gathering tools allowed this group of participants to bring all their self-taught skills into the classroom. The ability to maintain a comfort zone and create a bridge between their technology use at home and their technology use at school afforded them a strong technology identity in both worlds. It also created a support system for

their educational pursuits allowing them to maintain their grades and remain focused on their academics.

The three members of the second group, Danica, Dalton, and Debby, also reported using their smartphones to the exclusion of other devices. Danica described her experiences of taking, sharing, and enjoying pictures using her smartphone as well as her attachment to the device.

> Definitely! You can use your phone to capture beautiful pictures and post them on Instagram and get the word known out like spread it to others about events and stuff. You can post pictures on Facebook about events and share the good times you're having with others. I like the pictures of those people running the 5K. They're taking pictures of themselves running a 5K but they're running too at the same time. Social media can be used to capture beautiful moments but there's a point where you need to balance it with real life and your social media life. Some people take it too far to the point where they're always online. I'm guilty of the same thing. I almost have panic attacks when I'm away from my phone. Where is it, where is it, where is it.

Danica went through a series of addictions including Facebook, foreign films, and text messaging. At the time of our interview she stated she had found a balance and was able to maintain a focus on her education but her attitude toward her cell phone was indicative of the feelings for the rest of the participants.

During the interview process all 11 participants placed their cell phones on the desk right next to them. It was unknown if the phones were off or on except in one case

where the participant received a call. While their attention was fully on the interviewer, the phones were not out of their sight. The desire to remain connected was ever present in their actions with regard to their cell phones. It was also present in their words when discussing how face-to-face interactions with the teachers and staff helped them maintain a desire to achieve academically and remain in school.

This group also used YouTube and Google extensively at home and at school. Dalton claimed, "Google knows everything! Google is the way to go for me. Google or YouTube. You have somebody explain it to you rather than reading it." Debby said, "You can Google anything." Danica spoke about the restricted access to the school network through an explanation of how Google Drive was used for assignments.

> All you have to do is type things up. Then go to the button and click share and then there's a space where you can type in who you want to share with and you type in that teacher. Everybody's email on the school Google stuff is already loaded into the database and all you have to do is put their first initial and the last name will pop right up. You click it and you share with your teachers or with other students. Chip looks at all of it. He's our technology guy. He's even blocked actual sending emails to everybody because people were sending them in weird PDFs and things so teachers couldn't open them so all we do now is share. That's part of the reason we all use our smartphones to communicate with each other.

Siemens (2006) spoke to the need for openness and autonomy where users could freely express opinions and participate equally with others in their learning networks (p. 16). Smartphones allowed the easy circumvention of the restrictions placed on these two

traits. The participants connected with their personal learning groups within and outside the school. They emailed their teachers using their personal email accounts affording them a level of highly desired anonymity from the school technology staff. They accessed their familiar and comfortable knowledge and information gathering tools like Google and YouTube without content restriction. This was consistent with Siemens's statement that the more connections to personal learning networks, information, and strategies to gain knowledge, the more adaptable participants will become in creating new connections and new adaptations (p. 73).

As with the previous two groups, Ryan, Ralph, Randall, and Rachel also used their smartphones to connect with their personal learning networks at school almost exclusively. The exceptions were Ryan and Ralph. These two participants were heavily into gaming and used home computers specifically designed for this purpose. They communicated with their teammates either through Skype or through connections provided within the game. When they were not gaming they used their smartphones particularly at school.

Ryan explained why he preferred to use his smartphone rather than attempting to connect to the heavily restricted school network. "I don't mess with the school Internet at all. Chip makes it so hard to get on to it. I just use the 4G on my phone. I use my phone." Since moving to his own home Randall did not have a computer because he felt his smartphone, "It's like a handheld laptop" served his needs completely. This seemed to be the pervasive feeling for all the participants in this group. They saw their smartphone as easier to access with no restrictions at home or at school. If there was information that

they wanted to know immediately they were able to locate it with ease. Ralph reported his teachers required smartphones put away during lectures and discussion. If they wished students were allowed to use earbuds to listen to music while they are working on assignments. He listened to music to stay focused, "Twenty-four/seven, the whole time, I'll have my music playing. The music keeps me doing what I need to." While teachers did not use cell phones as a primary avenue of learning, the students used the cell phones to create a bridge between formal and informal learning. They accessed their families, comfort zones of music and games, personal learning networks, and knowledge acquisition tools.

For the individuals in this study the seamless nature of their technology identities had allowed them to fully integrate their social media and personal learning networks into the school experience. The smartphone served as a bridge between home and school and over the restrictive character of the school network. This technology influenced the participants by allowing them to remain in familiar territory when seeking new information gained from their personal learning networks or their preferred knowledge acquisition tools. Employing social media and personal learning networks increased both motivation and educational success. Gobble (2012), Maccoby (2010), Nordgren (2013), and Parker (2012) all indicated these factors played a significant role in fostering the impetus needed to complete high school diploma requirements.

Research Question 2

Research Question 2 asked about the perceptions of at-risk high school students regarding the use of informal personal learning networks for formal learning in the school

setting. Kolb (1984) described experiential learning, a close relative of informal learning, as a cycle with four steps. The first step is an experience that impacts the learner. In the case of the 11 participants in my study the experiences included their hobbies and interests. Next, the learner makes observations and reflects on the experience. Based on this reflective process the learner comes to conclusions and "forms abstract concepts" (p. 3). Finally, the learner applies the theory to new experiences. This early description of informal learning has been enhanced by the use of social media and electronic resources. For the participants in this study it meant access to their favored forms of learning, Google and YouTube where they felt questions were asked and answers appeared on the screen to be analyzed and shared. The findings in this study confirmed Kolb's cycle and identified the significant carryover of access to information through the use of the smartphone into formal learning.

The themes for Research Question 2 included *bridging technologies*, *connections, and connected knowledge.* Smartphone use has risen substantially among teens between the ages of 12 and 17 (Madden et al., 2013). One in four teens indicated they used only their smartphone to access the Web. Seventy-eight percent of all teens surveyed had a cell phone with 47% of those being smartphones (p. 2). In my study all 11 of the 18-year-olds had smartphones that could access the Internet through a satellite connection provided by their cell phone companies. The public charter school network was heavily restricted, limiting access from technologies favored by the participants for the purpose of learning. Satellite access allowed the participants to use informal learning strategies discovered and employed at home within the formal school setting.

The senior class of the subject public charter school was 20 students, a significant size difference from the local public high school where the senior class is 182 students. The small population of students of the subject public charter school created a feeling of closeness, friendship, and camaraderie. All 11 participants reported their Facebook friends were either family or friends known to them from school or their neighborhoods. There was significant overlap between their personal learning networks at home and their personal learning networks at school.

Arnold and Paulus (2010) commented on the positive effects of lurking where their research participants read posts from classmates but declined to respond. The instructor could not see the interactions between specific students by actual name but "community building and modeling" was verified through their research, which the authors asserted supported knowledge building (p. 194). All the participants in this study accessed user groups related to their hobbies and interests outside of school. Only two reported that they responded or commented within those groups. Nine preferred to monitor information rather than contribute to a body of knowledge.

In the public charter school setting user groups or access to a virtual area where students could openly ask questions, post information, or share experiences was not available. Collaboration was encouraged in the school setting particularly with the adoption of Google Docs where presentations, essays, and projects could be worked on simultaneously from any Internet connected location. Two students reported using Skype, their cell phone through text messaging, calling, or instant messaging to contact classmates outside of school to collaborate on assignments. All reported that the majority

of the time assignments were completed on campus with the group working together on one computer.

Bridging Technologies

All 11 members of this study had access to smartphone technologies. The smartphones created a bridge between comfortable technologies used at home and more structured learning opportunities within the educational setting. Applying Kolb's (1984) experiential learning cycle to their interests and hobbies outside of school found they used smartphones, tablets, and computers to support their informal learning efforts related to those areas. Smartphones were their preferred device both at home and particularly at school where access to the school network was restricted.

The level of restriction lead students to rely on their cell phones for access to their favorite websites. Tabitha explained, "I really don't even use my laptop most of the time. I have this app on my phone where I can go to YouTube and download it straight from YouTube onto my phone without hooking up to the computer. It's really convenient." Convenience and familiarity allowed students to have instant access to their favored tools for learning. Dalton indicated, "I check everything on my phone." Since moving to his own home Randall does not have a computer because he feels his smartphone, "It's like a handheld laptop." This seems to be the pervasive feeling for all the participants. They see their smartphone as easier to access with no restrictions at home or at school. If there is information they want to know immediately they are able to locate it with ease. Ralph reported his teachers require smartphones to be put away during lectures and discussion

but they are allowed to use them at all other times. They were allowed to use earbuds to listen to music while they are working on assignments if they wish.

YouTube and Google were the two most mentioned technologies for learning for all three groups questioned for this study. Their ability to learn was not hampered in any way whether they were learning how to knit or learning how to solve a complicated mathematical problem. Ryan explained why he preferred to use his smartphone rather than attempting to connect to the heavily restricted school network.

> I don't mess with the school Internet at all. Chip makes it so hard to get on to it. I just use the 4G on my phone. I use my phone. Open up Google Chrome. Search for the topic. The other search engines just aren't as good. I look at the hits that look the least sketchy. I look at what they say and how many pop-ups open up. If it has a lot of pop-ups I know it is no good. I have AdBlock to help with that. I use Google Chrome on all my stuff. I use to use a modified version of Google Chrome called Torch, which just had you, could download free music and it had Torrent thing for games.

All participants reported they used their smartphone in place of a computer, laptop, or tablet particularly when they were in school. Talia explained, "Sometimes our teachers will let us take out our phones and Google something. We use our phones as a resource. The laptops are shared between classes so we don't always have them. It's just more convenient to use your phone." Debby uses her phone to help her refocus on her work.

> I'll check my phone when I feel like it. I don't feel like I have to answer a message the minute it comes in. I keep my phone on silent. I check my phone

> every once in a while. When I feel like I can't focus anymore and there's no point at just starting at my paper I'll just do it and then alright I'm ready.

The ability to remain connected with family, friends, and educational professionals had high value for the participants. Danica explained the significance of her phone.

> I almost have panic attacks when I'm away from my phone. Where is it, where is it, where is it. It's kind of like… when little kids have one of their favorite toys or a blanket. It's almost like that. It's a comfort just to have it in my hand into my pocket. It's a comfort.

Kaplan and Mossberger (2012) and Warschauer (2004) found that users derived "socialtechnical" connection between their technology and their identity (p. 989). The importance the smartphone played in the lives of the participants in this study was demonstrated through their seamless use to further educational pursuits. The ability to bring comforting, informal elements into the more formal educational setting allowed them to garner success in the classroom. The smartphone allowed the students to conduct research and examine data negating the disparity of how technology was employed noted by Greenhow et al. (2009), Warschauer (2002) and Warschauer and Matuchniak (2010). The participants were in charge of access to their smartphones enabling them to use the personal learning networks they preferred. As Graham (2010) found, the participants in my study had established communities of practice at a distance as well as in school. They used social media, blogs, wikis, social websites, webpages, chat groups, and online communication applications to maintain connections and create two-way communications virtually.

The exceptions to total smartphone use were Ryan and Ralph. These two participants were heavily into gaming and used computers specifically designed for this purpose. They communicated with their teammates either through Skype or through connections allowed within the game. When they were not gaming they used their smartphones particularly at school.

Connecting to high-speed networks in the area did not have a limiting effect on participant ability to access their personal learning networks, social media, or preferred modes of learning. Squire and Dikkers (2012) found that an average of 7.5 hours per day was spent using smartphone technologies (p. 446). Smartphones had many advantages for my participants. They could use them anywhere including the classroom. They could stay connected to social groups at will. They could conduct face-to-face interactions through Skype. Knowledge support tools were used to create a specialized learning path unique to the participant (p.447). Learning was customized to fit the individual technology identity and learning style through the use of smartphone apps and features preferred by the user. Learning was amplified through "interests, self, social networks, and learning" and were strengthened through the use of the smartphone (p. 451). Learning was in the hands of the student with the smartphone acting as a bridge between the self-taught informal learning and the formal classroom learning.

Connections

In the traditional classroom model the teacher acted as the one authority, the fountain of all knowledge students needed to acquire. Greenhow et al. (2009) determined this model was being challenged by the need for active participation by learners, sharing

of information and opinions, instant feedback, and validation of ideas and concepts. Jin (2013) and Dunn (2013) discovered that when students saw themselves as participants in the creation of information and the sharing of knowledge they gained status, recognition, admiration, and motivation to continue the business of education. The construction of personal learning networks through social media creates connections allowing instant feedback through messaging and face-to-face digital communication. Greenhow and Li (2013) found that feedback from educators and peers in the form of text messages, video postings, visual representations, or written comments produces a collaborative network fundamental to the educational success of the members (p. 134).

Twitter is an example of instant feedback provided in a digital format. A member of the community tweets a question. The participants following that member read the tweet, retweet it, post it to other social media sites, or post their own tweet in response: amplification. The members of the digital community encompass a broad range of experiences, ages, ethnicities, and interests. This amplification of information motivates the participants to make additional contributions to the information. The more tweets are amplified, the more feedback is received, and the more motivation to continue tweeting. The benefits gained from the interactions, participation, and amplification include sharing personal experiences, using primary source information coupled with those experiences to contextualize new learning, and gaining understandings from a wide range of perspectives. Twitter demonstrates the diversity, autonomy, interactivity, and openness described by Bingham and Conner (2010) and Siemens's (2006) connectivism concepts.

The technology identity of the individual within each personal learning network type became an "amplifier" of knowledge through reflection, connection, and reconnection.

All the participants in this study valued a connected relationship with their peers and educational professionals. The teachers of the subject public charter school were using tablet technologies to expedite their communication efforts. At the time of this study face-to-face interactions and email were the only communication resources consistently used by the participants. Teacher amplification of information, as described in the Twitter example above, was quite low at the time of the study. In contrast the students were able to amplify information through their personal learning networks and social media using smartphone technology to expedite their interactions and gain understanding from a wide variety of sources.

Teresa, from the group of students who were thinking about dropping out of school, explained how the teachers responded to their questions. "They usually check their email through their tablets. Most iPhones or most phones have email access now and they use their computers because all the teachers have computers as well. I usually use my phone." Students, using their smartphones to bridge formal and informal learning networks, were able to gain feedback from their personal learning networks almost immediately. Students did not have access to teacher phone numbers for the purpose of text messaging, their preferred method of communicating with their personal learning networks. Talia provided an explanation for why she thought email was a better way to communicate with her teachers.

> I'll email my teacher a picture or projects. It is very rare. I will usually do it right there in class. I never have unnecessary contact with teachers through messaging. It's very professional, you know. If I had a question I would probably go and ask them face-to-face. I would try to figure it out by myself and if I couldn't figure it out by myself then I would resort to asking them.

The school email was strictly for teacher-to-teacher, student-to-teacher, and teacher-to-student contact. Teresa explained it this way. "Email is for the students and the teachers to talk back and forth. Students cannot share emails with other students." Tabitha said,

> Honestly I only email them when I have work due that I'm not able to get in on time. I have to ask for a few more days extra. It's pretty straightforward. I don't email them too often. I love the staff here for the most part. I feel more connected to them than I've ever felt. I never feel hesitant to email them if I need something. I know that I can. They usually respond within a day because they're periodically checking their email throughout the day.

While the participants felt comfortable with their teachers and other educational professionals there was a disconnection in their electronic communication. Email or face-to-face interactions were the preferred methods of communication by the educational community. Text and instant messaging were the preferred electronic communication mode for the participants. The one-way path of the email, teacher-to-student or student-to-teacher, did not allow for the information to be disseminated or amplified to other members of the class. The immediacy of response gained from text or instant messaging created a stronger social connection and promulgated the technology identity for all

participants. Talia explained why using her smartphone was a more effective communication tool.

> Email, but I don't really do that. I guess it goes back to technology tools in class. Sometimes our teachers will let us take out our phones and Google something. We use our phones as a resource. The laptops are shared between classes so we don't always have them. It's just more convenient to use your phone.

For all the participants in this study the smartphone served as a bridge between their formal and informal learning networks. They were able to access their teachers using the more comfortable email method the teachers preferred. At the same time the participants were able to contact their personal learning networks instantly using their preferred methods of text and instant messaging.

Ralph provided this perspective from the students who dropped out but returned to complete their diploma requirements. "We have email but email; a lot of teenagers don't really use it that much." Ryan shared a similar viewpoint. "I don't email a whole lot. That is most of the way you can contact them. I don't email them. I share things on Google Drive." When asked if she felt using email with her teachers enhanced her learning, Rachel responded, "Not really. They just use it for to get us assignments like when I was sick or tell us to send in our essays." The participants indicated teacher online availability after school hours was limited and response time to email varied. Several of them commented that face-to-face interaction with their teachers was much more satisfactory.

Danica, from the dropped out but thinking about returning group, explained what happened if they had a question about homework or other assignment after school. “If I can’t get a hold of my teacher through the email because I have a question about a homework assignment that’s when I’ll message someone in my class and see if they know the question.” Dalton elaborated.

> It is specifically for a school purpose. We use Google Chrome but to login it’s actually the name of our school, .org. So we use our email and then, I’m trying to figure out a way to put it. It’s mainly just for projects and stuff like essays and all that to be typed up because if you finish at the last second you can email it to them instead of having to print it out and bring it to them. You can just email it through the drive to them.

Personal learning networks were used in both formal and informal learning situations to clarify and amplify information at a pace more in tune with what participants desired, instantaneous. The participants submitted questions and assignments through email to teachers as required even though it was not their desired means of communication. The preference for face-to-face interactions may point to Luppicini’s and Lin’s (2013) finding that when trust is a requirement this type of communication is more conducive.

Google Docs had been introduced as a way to submit individual work, complete group projects, and for some teachers, provide timely feedback. Danica explained.

> All you have to do is type things up. Then go to the button and click share and then there’s a space where you can type in who you want to share with and you type in that teacher. Everybody’s email on the school Google stuff is already

> loaded into the database and all you have to do is put their first initial and last name will pop right up. You click it and you share. Chip looks at all of it. He's our technology guy. He's even blocked actual sending emails to everybody because people were sending them in weird PDFs and things so teachers couldn't open them so all we do now is share.

Teachers can easily make comments and return work for editing. Some of the teachers in the subject charter school used this process but the students indicated the majority provided only a final score without comments. This contradicts the proposals of Greenhow and Li (2013) where feedback provided by teachers, mentors, and peer created a collaborative network that motivated users to increased participation (p. 134). Tanner provided his experience.

> In English we're writing something that's kind of like a reflective story about how we learned a life lesson. We're just doing it in a college format essay. We draft it and then we type it up. We email it to our teacher. It's an email and he opens it up. It's a PDF or Microsoft Word document. He'll read that and I'll get the grade in class. There is a rubric that he fills out. He'll give us that and give us comments on that. He gives us that with the grade on it so we have documentation of what happened.

Ryan provided more details.

> They put it in the gradebook for a grade. They have a rubric. I don't know all of it. I just know my grade. Usually I don't see my grades except every three weeks because I am confident in my skills. I could [check his grades every day] but I

> don't know how but I know you can. I haven't taken the time to learn. I actually have my grades here. I have them on paper because they give them to us at our class meetings.

Randall shared his opinion. "We just get a grade. We email it to him. It's not like a paper. He just grades it and probably deletes it. I would like to see what he thinks about my writing. I am happy with my grades for the most part." When feedback is limited, participants can become discouraged and their involvement may wane. Pollara and Zhu (2011) found that when little or no feedback was given, participant activity and thus amplification slowed. They also found a combination of weekly face-to-face meetings and social media connections created strong virtual relationships when mentors or teachers participated frequently.

The move to Google Docs allowed the participants to work more easily in a collaborative setting, which improved both their engagement and their knowledge base. Feedback provided by teachers through Google Docs was rare. At least one of the teachers provided a printed rubric. The participants in this study worked on collaborative projects during the school day using one computer or laptop with their partners present. Peer feedback was instantaneous. The teacher and their relationship with the students was a significant positive factor in student learning. Their continued support and encouragement coupled with allowing student access to smartphone technologies provided the participants with the opportunity to discover the blending of informal social learning and formal educational learning.

Connected Knowledge

Access to smartphone technologies, social networks, and the Internet allowed the participants in my study to create virtual connections between their personal learning networks and their formal learning. As Siemens (2006) suggested, these knowledge connections included anchoring, connecting, filtering, and social spaces to create the framework for comprehending personal learning networks, social connectivity, and knowledge creation. Technology enhanced these connections allowing them to take place anytime, anywhere. The connections the participants created broadened, deepened, and enhanced their access to additional knowledge resources. Being allowed the use of personal learning networks for both formal and informal learning opportunities, the participants were able to access information using their preferred methods of learning and create avenues of dialogue, as Ravenscroft (2011) proposed. Their connected knowledge was enhanced through the use of virtual spaces devoted to learning (p.155). These spaces included YouTube, Google Docs, and web-based search engines.

All four students in thinking about dropping out of school group were able to describe in detail how to search the Web for information and solve problems related to their hobby or interest. They also described how they used that information to inform their learning activities in school. Talia gave this detailed explanation about how she conducts an interest search.

> It's very spontaneous. I'll be watching a YouTube video and I'll see Earthships. What are Earthships? I'll Google Earthships and try to look for an article on the topic. I'll go to images, videos. That's a good question actually. I try to make it

> very to the point. If it is Earthships I'll just type in Earthships but if it is a question, questions are a little bit harder. I'll look at the ones that look legitimate. If it is a file from an actual company or actual organization or non-profit information I'll go to there. I like to avoid Wikipedia. Yahoo Answers is interesting if you want to look at general opinions and see what other people think. I just feel like you can't really trust it. I hate the way Wikipedia is set up. It's like reading a manual. I love to read articles about everything I can. Sometimes I like to watch videos but videos kind of irritate me. Sometimes I'll find a video and I'll be very excited to watch it. Then when I watch it I get let down. If I am reading an article I can't really get let down because it's my own internal voice reading it. I can go back and read it again. If it's a video somebody will be trying to explain something. They'll be over explaining it or under explaining it. I can tell they don't have their facts or they're not very legitimate. I felt like an article by a college or company will be more accurate with the truth. Anybody can go into Wikipedia and change things around. I've even read things in Wikipedia, which I know, weren't true. I've heard teachers tell me not to use Wikipedia for your answers.

Talia demonstrated the freedom connected to responsibility described by Nordgren (2013) particularly when she avoided Wikipedia as an unreliable source. Her focus was directly on the final product and the knowledge gained from the activities taken to achieve that product (p. 5). Her motivation was to discover unique methods for answering her questions. Her purpose was to learn while satisfying her own curious nature.

Tabitha described the steps she takes to find information. Rather than being spontaneous, like Talia, Tabitha took a methodical and structured approach. She did not judge reliability based on experience but on how well the information matched her question. Tabitha did not express a desire for one type of presentation of information over another appearing to rely on print media over, audio, or video information.

> Sometimes you have to be tedious if you're looking up. Sometimes I don't know the words to the songs that I'm looking up so I have to look up an artist and go through all their songs. If I'm researching something I'll have to go to several different website pages before I can find what I'm looking for. First I would probably Google the question that they gave me. It depends on the question. I'm not going to put the question word for word in there because it probably wouldn't give me what I'm looking for. I would probably do that first and if I didn't get what I was looking for I would put the subject of the sentence in the search box. Then if it was asking for a date I would look up the history of the subject. I look in the description. I go with the one that is closest related to the question I asked. Then I look at the website because I like a reliable source. I'm pretty bad about remembering what sites I've been to. Honestly it's just kind of hit and miss when I'm searching stuff. I just go through until I find what I think is going to work. I write them in my own words, a mix between paraphrasing and using my own words. I use citations and references with works cited.

Tabitha also demonstrated responsibility when she provided citations and references for her digital resources. As Lavigne and Mouza (2013) established, reflection played a

fundamental role in the 21st century skills of critical thinking, innovating, collaborating, communicating, and "self-regulating" which Tabitha demonstrated in her persistence in finding reliable information sources (p. 269). Social media provided a platform for her informal, personal learning network based, educational experience. It allowed the Tabitha to have a high degree of autonomy, motivation, and connection. Using her smartphone, Tabitha was able to access and manipulate information and media, share with the members of her personal learning networks (PLN), discuss with the PLN members, form new ideas or draw conclusions, and apply these ideas to new situations. Tabitha demonstrated autonomy and responsibility, which led to an increase in motivation, persistence, social connection, and the willingness to further educational endeavors.

Tanner expressed his use of personal learning networks as they relate to knowledge connections by drawing on his experiences with gaming.

> I've learned a lot through the Internet. There is so much that I never thought I'd learn. Seeing all these different people and how they go about their life, what they talk about and what's important to them. How they talk to me and how they talk to others and how to deal with that. How to make friends through that. How to be careful through that. I've learned that a lot, too, how to be careful with who you hang out with and who you talk to. I've just learned a lot because I guess because I started at such an early age and then got into the online aspect of gaming. You learn positive reinforcement. You could be losing and it doesn't do any good to put your teammates down and tell them they're not doing good. You do learn a lot from working together. It's almost like having a team in real life. You do have to

> be on the ball in the game if you take it seriously. Some people don't. We try to take it seriously and try to be as good as we can. I do take things from that into school. If we're doing a project I'll take some leadership skills about how to get everybody on the same page and talking about the project without making it sound like you're trying to control them. Actually just trying to help everyone to get on the same page and work together looking for their strengths and my own and make connections so the project gets completed.

Tanner's networks allowed him to communicate and share knowledge through online dialogues. He carried the knowledge he learned about how to encourage and motivate through gaming into his face-to-face interactions with his classmates. Tanner demonstrated two of Siemens's (2006) four traits: interactivity and openness (2006, p. 16). Interactivity allowed Tanner to produce a product that was a true representation of all his interactions leading to knowledge rather than an aggregation of ideas. Tanner's openness allowed him to participate at an equal level with his gaming partners and with his classmates.

While at school, this group was willing to share and contribute to group projects with their classmates using Google Drive and through face-to-face interactions. When asked if they ever posted comments to the communities they monitored, Teresa, Talia, Tabitha, and Tanner all replied they did not. They also expressed that their posting on Facebook was limited to only occasional activity and that their current Facebook settings provided access only to friends and family. Talia said, "I'm a troll on Facebook. Do you know what that is? I just go around and look at other peoples' things." While the rest of

the group did not use the term "troll," all of them agreed they preferred to monitor their feed and read the exploits of others rather than posting frequent updates. Face-to-face interactions with individuals they already knew like family, friends, and their teachers, appeared to take precedence over online friendships with people they had never met similar to Ito's (2010) findings. It is unknown if this is a limitation to their ability to create knowledge connections beyond their personal learning networks.

In follow-up questions during member checking interviews, the three students in the dropped out but thinking about returning group were able to expand their discussions on the topic of utilizing their personal learning networks to make contributions to their knowledge connections. Danica described her use of one of the websites she followed.

> I do use my technology a lot in the classroom. Like on my phone nowadays I can look at The Huffington Post and I am able to find something on that and I can have an educational discussion with my economics teacher.

Danica was able to locate information related to a classroom assignment. She discussed the information in detail with her economics teacher who encouraged her to find additional resources to confirm or refute the single source she originally cited. The connection Danica created between her online resource and her teacher allowed her to broaden and deepen her knowledge and enhanced her access to knowledge.

Debby explained how she used Google for schoolwork exactly as she used it for gaming.

> Well, say I have homework that I can't figure out, I'll Google how to do it. Like I do for the video games. Sometimes there's videos if I feel like I really need to see

> it happen so that I can learn it. Some math problems, last year I was in Algebra II. It was really hard sometimes to do my homework. If I wasn't there one day I have to see it step-by-step. I would Google the type of math problem I need help with. Videos pop-up first and if I see a video and I feel like I need that much help I'll click on the video.

Debby demonstrated interactivity too by taking a number of problem explanations and using them to build a connection to her algebra exercises. Rather than a collection of ideas, Debby created her own solutions by watching videos and reading explanations of how to solve problems. She was able to review the step-by-step procedures repeatedly until she gained understanding. When presented with more challenging problems she was able to transfer previously gained knowledge to the new situation.

The three members of this group were able to explain how they used social media in combination with their personal learning networks to enhance their experiences with their hobbies and interests. Dalton shared how he learned to play his guitar using YouTube and Google.

> I'll get on the Internet and look them up. Especially when I learn them I have to look up the music so I'll look it up on the Internet or something or watch a tutorial video on the Internet. I'll go to YouTube to look up somebody that's playing it and then I'll go to Google at the same time to look up the notes at the same time I am watching. They're call tabs. It's tablature. So you look up tabs. There's a specific site that I use it's called Ultimate Guitar and it has all the guitar tabs. All the bands whenever they're done with their music if they want to post it they can.

> It has a really good rating from everybody that blogs on there. There's like a rating over the blog and everybody picked five stars for this site. I just scan quickly through that. I don't really pay too much attention to the details. You can look up the tab for the site and I'll go to YouTube and watch that person do it. The one that was the most reliable site was the one because the band actually puts stuff on there. They put their music on there.

Dalton taught himself how to play guitar using the strategies he described in this quote. He used his self-taught knowledge of Web searching to locate sites with the highest ratings and the most valid information. He watched videos, sometimes in slow motion, and read the music to learn how to create the correct sounds on his guitar. He recognized the patterns within the music and translated those patterns to his own musical efforts. The more connections Dalton made, the more adaptable he became in creating new connections and adaptations for his playing.

Danica, Dalton, and Debby did not make contributions to their personal learning networks on a regular basis. They preferred to monitor their feeds and occasionally post pictures. All of them had, had Tumblr, Twitter, Vine, and Snapchat accounts at one point but none of them used those social media with great frequency.

All four participants in the dropped out but returned group detailed their understanding of how finding information related to their hobbies and interests was brought into their learning in school. Ralph provided an explanation of how he compared information found during a search for an assignment.

> Say I am doing a report I want to look for something and I really want to get good information and not something that is totally made up. I want to be able to say or write whatever I want and I want it to be the right facts. I use works cited. I don't want plagiarism or anything like that. If it is a school website with edu in it you can usually trust it. If it is edu it is not going to lie because they're going to compete with all the other schools on their information. So they're mostly right but Wikipedia I would not trust because they can be changed any time. I will find a page and I will read what is on it. If it is anything new I will be like okay that's cool and I want to put that in my work I'll look it up again and try to see if I can find the same information on any other websites. I try to compare them.

He also shared how one of his games sparked an interest in history leading him to explore the Web for more information on certain historical topics.

> It gave me a lot more common sense. There are some games that are totally ridiculous and random. Some games that are based on real life stuff. You survive and try to do what you can. A lot of the stuff you can relate. A lot of the games go back into history. Some games you go through Leonardo Di Vinci times and all that. You find out stuff. This one called Assassin's Creed where you're an assassin and assassinate people. If you look it up every single person who dies in the game……You have to do what the game says. You can't do whatever you want. Every person who dies in the game is a real thing in history that happened, are real people. The quotes they use are real quotes that have been written down. That's helped me in history amazingly. Sometimes I'll be interested in them. I'll

> have no clue about who they are and I'll learn about them in the game. You can go to the menu and there is info with biographies about people. I have learned a lot of stuff about people. It got me really interested in history. I used to not really care for history but history is now one of my favorite subjects due to certain games.

Ralph evaluated and authenticated the information he found online to insure it was reliable and valid. He was able to create and derive meaning from the information using the knowledge gained previously through his gaming experiences. The gaming experiences piqued his interest in history prompting him to conduct his own research into the figures he encountered. His interest and motivation were positively impacted by his gaming experiences.

Rachel also provided a description of how she finds strategies to solve math problems.

> If I have an assignment and I have no idea what I'm doing I'll look it up. I mostly go to Google for it. They have websites and how-to or just videos. Ranging from there I try to find something that makes me understand it if I don't. I'll look through websites. I just glance at it to see if it is something that's understandable. Normally for me it doesn't work that way so I'll go to videos. Having them talk out what they're doing and how they're doing just helps me better. It comes from looking up previous stuff. I'll look at the URL before I click the search result. Normally I'll remember that URL. If I look at it and understand it then I'll actually do it. If it comes out correct then I can tell it's a reliable source.

Like Debby, Rachel demonstrated interactivity by using websites and videos to assist in assignment completion. Like Dalton, she was able to review the step-by-step procedures repeatedly until she gained understanding. She based her evaluation of the videos and websites on the outcome of her own problems using previous experiences to guide her decisions about website selection.

All four members of this group used Google and YouTube extensively. They had Facebook accounts to monitor friend activity, post pictures, and instant message. Two members of this group use Skype heavily to communicate with teammates during online gaming sessions. Randall shared how he used YouTube to learn how to accomplish complicated skateboard tricks. He also posted his own videos and demonstrations created when he did commercials sponsored by a local skate shop.

> What would be perfect for this is when I try to learn a trick on my long board or skateboard. I go on YouTube and type in "How to ….". Ninety-five percent of the time it teaches me exactly. YouTube got it. It's like another person in front of your face telling you. I pause the video right at a skate position when he's about to do it. Depending on the video, whether they slowmo it or it just depends on how they explain it in the video. Sometimes I just watch it a couple of times and I get it. Sometimes I have to dissect out a lot of it. I use to have so many skateboards that I'd have a skateboard without wheels in front of the computer and I'd just sit down and play with it.

He explained how he was able to repair his cell phone by watching a YouTube video.

> Like with my phone for instance. The camera thing broke and I went on ask.com to find out how to fix it. I posted a question and someone replied back with a link to *Replace That*, which is actually a YouTube video.

Randall's motivation to succeed drove him to complete the perfect skateboarding trick. His smartphone repair was motivated by his need for connection. His approach to the problems was similar, locate the information online, and watch it repeatedly until he was able to execute the moves or repairs correctly. His purpose for learning, creating a knowledge connection, was driven by his personal interests and desires. He carried this motivation into other areas of his life including his schoolwork.

Siemens (2006) stated that knowledge is connected and ongoing. Gaining knowledge takes place by creating connections to what we "see, know, and function in connections" (p. 4). For the participants in my study, technology enhanced these connections allowing them to take place anytime, anywhere. They analyzed, evaluated, and synthesized the knowledge they gained connecting it to new situations, experiences, and learning. They did not perceive any difference between the methods they used to find information for their interests, hobbies, or school assignments. There was a strong desire for reliable information in both settings. They easily achieved access to their preferred learning method, text, visual, or auditory. For them using their informal personal learning networks for more formal learning in school was innate. There was no difference with the exception that in the educational setting they were required to cite their sources and supply the appropriate reference information. This requirement did not alter their analysis, evaluation, or synthesis of information.

Summary

For the individuals in this study the development of a technology identity that was consistent at home and at school allowed them to fully integrate their social media and personal learning networks into the school experience. Their smartphone served as a bridge between formal and informal learning opportunities. The smartphone availability and ease of use allowed the participants to access their preferred personal learning networks, social contacts, and favored knowledge acquisition tools when searching for new information or answers to questions. The participants examined, assessed, and synthesized the knowledge they gained connecting it to new situations, experiences, and learning. They used the same naturally discovered techniques to find information for personal interests, hobbies, and school assignments. Locating reliable information held a high value for all participants. Employing social media and personal learning networks increased participant access to educational professionals, and their success in the classroom, and the motivation to complete their diploma requirements.

Chapter 5 presents the purpose of my study and the implications of my findings are placed in the context of the conceptual framework. Recommendations for additional research and the implications for social change are provided with a review of current research as it relates to student perceptions of the role technology identity, social media, personal learning networks, and informal learning play in facilitating the graduation of at-risk high school students.

Chapter 5: Discussion, Conclusion, and Recommendations

There were two areas of concern in this qualitative case study: dropouts and technology. High school graduation is the number one indicator for success as an adult (Gifford, Evans, Berlin, & Bai, 2011). High school graduates are better equipped and more successful as they mature, earning higher salaries, becoming better citizens, and staying healthier. In addition, high school graduates are more law abiding when compared to dropouts. While 24.5% of the total high school population fails to graduate, the gap between graduation rates reported by ethnic groups demonstrated a disparity between African American students at 36.7%, Hispanic students at 34.8%, Caucasian students at 18.4%, and Asian classmates at 7.5% (p. 4). The discrepancy exhibited by these percentages showed the need for interventions to narrow the gap for all groups.

The purpose of this single case study was to assess student perceptions of the role technology identity, social media, personal learning networks, formal learning, and informal learning played in facilitating the graduation of at-risk high school students. Three groups were analyzed: at-risk high school students who were considering dropping out, at-risk high school students who had dropped out but returned to high school, and at-risk high school students who had dropped out and were considering returning to high school.

This qualitative case study employed a series of interview questions to explore the perceptions of 11 at-risk high school students about technology, their identity within the technological world, their use of social media to make connections to their peers within personal learning networks, and the connection to informal learning to formal learning.

Follow-up interviews were conducted to provide member checking and gain additional information. Digital recording devices were used to document participant responses. Following transcription, patterns and themes were identified for each group within each question.

By documenting the perceptions of and influences of a connected world for at-risk high school students, this case study may inform educational professionals about the most effective methods of using social media, personal learning networks, and informal learning to motivate and support students as they complete their diploma requirements. Helping students find their technology identity and fully use their personal learning networks through a wide range of social media sources for the purpose of learning may provide a needed safeguard for keeping them engaged in the educational process.

Goode's (2010) approach to technology identity, wherein individuals' perspectives on their technology skills, their access or lack of access to technology, their view of the significance of technology in their lives, their desire to place technology into their learning schema, and the blending of elements into the their personal belief systems (p. 498), guided the examination of the first research question. Current research demonstrates that the development of a technology identity and perspectives about educational opportunities are influenced by the use of social networking and the formation of personal learning networks (p. 501). The interviews conducted with this group of 11 students indicated that smartphone use played a significant role in participants' ability to connect with their personal learning networks, including their teachers, classmates, and family members. Their perception of their technology skills

ranged from expert to knowledgeable. Technology played a significant role in their lives, particularly through the use of their smartphones, and impacted their time outside of school in the enjoyment and pursuit of their interests and hobbies. Technology was thoroughly blended into their belief systems and was an integral part of their lives both at home and at school. Technology impacted their personal lives as well as their ability to experience success in school. While their relationships with those involved with their academic lives was chiefly based on face-to-face interactions, there was a desire to have a virtually based connection through the use of text messaging, blogging, a wiki, or a school-based Ning.

Kolb's (1984) four-step cycle involves an experience impacting the learner, the learner making observations and reflecting on the experience, the learner coming to conclusions and "form[ing] abstract concepts" based on this reflective process, and the learner applying the theory to new experiences (p. 3). Kolb's cycle informed the interviews and my analysis of the results for the second research question. In the case of the 11 participants in this study, informal learning experiences included their hobbies and interests. These events showed a high level of influence on their technology usage within the formal, school-based learning setting. The smartphone was used at school for searching and communicating, to the exclusion of all other devices, to avoid the restrictions within the school network. Smartphones acted as bridging technologies bringing informal learning skills discovered independently at home directly into the formal learning process.

Interpretation of the Findings

Three theories comprised the conceptual framework for this study: Pink's (2009) concept of motivation, Siemens's (2006) connectivism theory, and Bingham and Conner's (2010) theory of engagement and social learning. The conceptual framework provided a structure for interviews about participants' technology identities and perceptions about the use of informal learning through their personal learning networks in a formal learning setting. Participants' individual stories provided clues to reasons for failure to succeed in the high school setting. The social implications and long-term effects of their failure or possible failure were discussed using the lenses of motivation, ability to make and sustain connections, and engagement in society.

Pink's (2011) concept of motivation and its three contributing factors (autonomy, mastery, and purpose) directed the interpretation of the findings for Research Question 1. Sustaining the ability of students to understand how motivation influenced their perceptions of the effort needed to succeed in both formal and informal educational opportunities is a superior indicator for success (Duckworth, 2013, p. 2). Goode's (2010) description of technology identity—in which individuals' perspectives about their technology skills, their access or lack of access to technology, their view of the significance of technology in their lives, and their desire to place technology into their learning schema are blended into the individual's personal belief system (p. 498)—also framed the analysis and interpretation of the responses for this question.

Siemens emphasized the power of diversity, autonomy, interactivity, and openness to create personal learning networks through digital connections. These

concepts guided the interpretation for Research Questions 1 and 2. All of the participants spoke of the strength of their connections to others, both facetoface and digital, addressing the positive effects those connections had on them personally and academically. They all indicated that they were able to work independently as well as in collaborative settings. All participants created personal learning networks through a variety of social media venues where they reported their engagement to range from rare to extremely active. All used their smartphones to engage in personal connections as well as handheld laptops to find information.

To frame the interpretation of social learning and engagement, Bingham and Conner's (2010) theory, according to which people learn best with and through other people, informed Research Questions 1 and 2. These theorists argued that social media unlock the potential for this type of dynamic and inclusive exchange, addressing the need to bring widely dispersed groups together, allow access to subject matter experts, differentiate content based on learner needs, and reach across a wide body of individuals regardless of age. Social media allow for more personal connections, and learning is accelerated when partnered with powerful technology tailored to fit the user. Social learning knowledge is quickly and easily acquired, allowing the learner to adapt to new situations and learning requirements. Bingham and Conner contended that social learning "transcended" social media by offering additional data, wider distribution of information, and an open network of "communicators and collaborators" (p. 8). The participants in this study communicated freely with the members of their learning communities. They collaborated with friends while pursuing their hobbies and interests. They also

collaborated in the educational setting to complete group assignments. The introduction of Google Docs, Google Drive, and Google Mail was beginning to create a collaborative network for students and teachers to more easily access, share, and distribute information in the more open format Bingham and Conner espoused.

Research Question 1

The first research question asked the following concerning the three groups in this study: How does the development of a technology identity using social media and personal learning networks influence at-risk high school students to complete diploma requirements? The participants in this study identified their technology skills as ranging from expert to knowledgeable. All were able to access a wireless network at home using laptop, desktop, or tablet technologies, smartphone technologies at home and at school, and laptop, desktop, or tablet technologies at school. Technology played a key role in their ability to remain connected to their friends and family, particularly for those who had significant ties and relationships with individuals in other parts of the country. In this regard, the groups followed Goode's (2010) description of technology identity in relation to their technology skills, their access or lack of access to technology, and their view of the significance of technology in their lives (p. 498).

Collaboration, email, and document sharing using technological tools played a less significant role in maintaining relationships with people involved in participants' educational experiences. The introduction of Google Docs, Google mail, and Google Chrome to the school 3 months prior to the interviews was just beginning to alter the culture of communication on campus. The participants and the school staff had not fully

embraced the changes. Small class sizes and a tightly knit community within the public charter school created greater comfort for face-to-face relationships in which students were able to communicate with the teaching staff regularly. All participants remarked on the ease with which they could discuss issues related to their educational or personal lives. Kenny, Walsh-Blair, Blustein, Bempexhat, and Seltzer (2010) and Pink (2011) found that nonacademic factors including an expectation of success, a positive perspective concerning the future, mastery, and a sense of autonomy were strong indicators for student accomplishment. Face-to-face interactions carried particularly strong emotional and motivational attachments for the participants in this study. Eight of the 11felt that their connection to teachers did not need to be altered. Three felt that texting, Skyping, Google Voice, instant messaging, a wiki, blog, or a Ning would be an asset to their educational experience and motivation.

The 18-year-old participants in this study all had smartphones that they used often to access the Web both at home and at school. As mentioned above, access to the school network was heavily restricted. Cell phone use was not prohibited except during classroom lectures. Students used their smartphones as handheld computers to access the Web in search of information; to contact teachers, family, and friends; and, in one case, to type and submit assignments. Their school had tablets, laptops, and computers available on carts and in certain classrooms. At home, two participants had tablets; all had personal laptops; three of the male participants had powerful gaming computers in their bedrooms; and all had access to a computer in a common area of their home. This information confirms the latest Pew Research Center (Madden et al., 2013) findings

concerning technology use by teens between the ages of 12 and 17, as it was discovered that smartphone use had risen substantially (p. 2).

All 11 participants in this study were open and honest in the creation of their social media identities. They limited access to family and friends but revealed their true first and last names, personal information, and birthdays (Greenhow & Robelia, 2009a). Four of the participants in this study expressed the primary reason they were using social media like Skype or Facebook was to maintain connections with family living at a distance (Luppicini & Myhill, 2013, p. 137; Luppicini & Moir, 2013). None of the participants had created a technology identity using the new Google platform within the school setting. They were able to email teachers and staff but preferred to use their personal email for this purpose. They were not allowed to access other students using the school email system. Teachers and staff were their only allowed contacts. Ito described two online groups: "friendship-driven and interest-driven" (2010). Friendship-driven connections typically included relationships already established through face-to-face contact. The connections consisted of social networking applications, like Facebook, instant messaging, or online participatory video games. Activities might include "chatting or flirting; uploading, downloading, or discussing music, images, and video; updating profiles and writing on friends' walls; and playing or discussing games" (p. 122). The participants in this study modeled this finding exactly.

Every participant in this study demonstrated their desire to place technology into their learning schema as Goode suggested (2010). Based on my 1-hour interview with each student, it appeared technology had blended into their personal belief system and

had become an integral part of his or her lives at home and at school (p. 498). Smartphone use in particular allowed them to remain connected to their networks of family and friends as well as information at will. All of the participants were able to describe in detail how they used technology to access information within their areas of interest and for school assignments. Siemens (2005) described learning as both external or networked and as internal or neural. Both types of learning are connections created through the recognition of patterns of understanding (p. 29). The participants easily described their effective searching techniques as well as their connections to networks of people within the context of formal learning in the classroom. These were skills they taught themselves outside of school. YouTube and Google were the preferred venues for finding and learning how to accomplish their personal learning objectives. Siemens found the more connections people are able to make, the more adaptable they become in creating new connections and new adaptations (p. 73).

Transference to learning did not involve the technology alone. Three participants described learning positive reinforcement, leadership skills, common sense, teamwork, respect for authority, and task completion through gaming. Social skills were acquired by interacting with players around the world. Deke and Haimson (2006) found that the most significant predictor of student success was attributed to nonacademic competencies similar to the ones the participants shared including work habits, sports, leadership, social interactions, and a feeling they are in charge of their own destiny.

Social media and personal learning networks at home consisted of Facebook, Snapchat, Instagram, Skype, and Tumblr. All participants used Facebook but it was not

their primary form of social media with the exception of two participants who self-reported almost addictive behavior with regard to social media. Nine participants had moved beyond Facebook or had other outlets to create connections through gaming, hobbies, or interests. Snapchat was preferred by five of the participants for its privacy, ability to message, share images, create unique drawings, and participant feeling that messages disappear allowing them to remain private. The ability to form connections through a network is the definition of Connectivism as described by Siemens (2006, p.29). His four traits of connective knowledge: diversity, autonomy, interactivity, and openness, were well demonstrated by this group of participants (p. 16). He also found that a technology identity provided the opportunity to form personal learning networks for the purpose of "collaboration, socialization, and doing things together" (p.72) something all of these students recognized.

The interviews were focused on identifying the creation of a technology identity that allowed at-risk students to produce connections beyond their family and face-to-face relationships that lead a broader social context for their educational efforts. The research indicated the creation of an appropriate technology identity within an integrated format of social media and face-to-face interactions created a stronger connection to teachers and educational professionals, higher satisfaction with the learning process, increased motivation, and a stronger sense of identity outside the virtual world. The participants in this study did not create a strong technology identity within the school setting. Rather they relied on a face-to-face connection within a small group setting and a weak connection through the use of email and Google Drive. This contrasts with their robust

and varied technology identities outside of school. However, all of them pointed out they used the same technology at school and at home, the smartphone, to accomplish both informal and formal learning tasks. Two participants expressed the fact that their technology identities at home and at school were identical.

Research Question 2

The second research question asked the three groups: *What are the perceptions of at-risk high school students regarding the use of informal personal learning networks for formal learning in the school setting?* All 11 participants in this study were able to describe learning experiences as they related to personal hobbies and interests. They applied those experiences to formal learning in an educational setting by accessing personal learning networks, social media, and favorite electronic resources.

All 11 participants had access to smartphone technologies. There was a significant bridging of access to information through the use of their smartphones in the formal learning setting. There was also significant overlap between personal learning networks at home and personal learning networks at school. The smartphone was their preferred research and communication device both at home and at school. The convenience and familiarity with the device and the tools it contained provided instant access to their preferred learning networks. The pervasive feeling was the smartphone was as much a computing device as a communication device. Kaplan and Mossberger (2012) and Warschauer (2004) found that users derived "socialtechnical" connection between their technology and their identity (p. 989). The participants in this study demonstrated the importance the smartphone played in their lives through their seamless use to further

educational pursuits. In addition they were able to customize their learning efforts to fit their technology identity and learning style by selecting apps and features suiting their personal preferences. Learning was in the hands of the student with the smartphone acting as a bridge between the self-taught informal learning and the formal classroom learning. There was a perception voiced by all the participants that while researching a subject at school required appropriate citations and references, the methods used to retrieve, examine, evaluate, and synthesize information were exactly the same as the methods they used at home.

The participants in my study were connected to their family, peers, and professionals involved in their education through email, social media, and face-to-face interactions. Face-to-face and email with the predominant connection with teachers and staff of the subject charter school. Students were not allowed to use school-wide email for peer-to-peer interactions. The use of smartphone technology allowed the participants to maintain the low amplification email contact while accessing the much higher amplification of information provided by text messaging, instant messaging, YouTube, Facebook, Twitter, Snapchat, Skype, and other forms of social media interaction. The wider access to outside sources provided by social media and personal learning networks allowed for instant connections with peers and perceived experts.

The smartphone provided a bridge between the informal, familiar, and comfortable social and personal learning networks preferred by the participants and the formal, awkward, and confined network preferred by the educational staff. Instantaneous access to information was highly valued by this group of students. Teachers and staff

hours were limited to the school day making them unavailable if questions arose during the evenings or weekends. Even though Google Docs was used to submit and share documents, teachers did not regularly provide feedback or encourage collaboration. The participants reported they often worked side-by-side with their partners using on computer at school to complete collaborative work. Teachers did allow smartphone use during class with the exception of lectures. Use was limited to access to personal learning networks, text and instant messaging, search engines, online dictionaries, video, music, and Google Docs. Teachers did not utilize applications and tools to enhance the learning experience for their students.

The participants in my study articulated the knowledge connections Siemens (2006) suggested, anchoring, connecting, filtering, and social spaces. Access to their preferred tools and strategies for searching allowed them to remain focused on the task at hand without undo distraction. They were persistent in their searching using reliable, tested, and primary resource material filtering the information to find data suitable to answer their questions or problems. They connected with outside sources to include experts and peers within their social and personal networks.

The ability to perform these tasks was learned through trial and error as students pursued information related to their hobbies and interests outside of school. They found these same skills invaluable as they began to search of information related to their formal academic pursuits. The ability to answer questions independently provided increased motivation and piqued curiosity. It also allowed the participants to choose how to access information based on learning preferences. The ease for repetition of information allowed

the participants confidence in their understanding and abilities. The use of multiple sources of information affirmed their knowledge allowing them to create new connections and adaptations. Connected knowledge was instinctive for the participants in this study. Smartphone use, social media, and personal learning networks coupled with face-to-face interactions, small class size, and high level of accountability afforded them the motivation to succeed in the educational setting.

Limitations of the Study

The primary limitation for this study was the use of a single charter school. The school draws from a number of surrounding districts. The entire population carried the at-risk designation and fell under the dropout criteria specified for the study. Not all the students enrolled in the public charter school satisfied the age requirement. The socioeconomic, geographic, and cultural backgrounds of the charter school population mirror those of the surrounding school districts, which may add weight to the ability to transfer the findings. Yin (2009) indicated single case study designs are "vulnerable" due to the lack of contrast, inability to conduct a critical analysis through contrast, and the loss of "direct replication" (p. 61). Since this case was revelatory, single case study design was appropriate (pp. 48-49).

A second limitation was the truthfulness of the students. Descriptions of technology prowess, use of social networking, and interactions with personal learning networks could be under or over stated. Visiting participant social networking pages or other virtual connections would provide a more accurate representation, but could interject my view as opposed to representing the participant view. Interview questions

were used to determine participant veracity and create an unbiased depiction of technology identity, use of social media, connection with personal learning networks, and integration of informal learning strategies in an educational setting.

Recommendations for Further Research

Education in the United States has begun to slowly change. For the U.S. to maintain a robust and vibrant economy all citizens must be educated and remain informed about relevant events (*United States Education Reform and National Security*, 2012). Students who do not achieve the minimum standards associated with high school graduation are less likely to be a positive force in their community or country. Students who do not graduate from high school face a variety of difficulties. They have difficulty finding and maintaining employment, they are more likely to participate in illegal activities, and they are more often incarcerated. In addition, their earning capacity is sharply lower from that of their high school diploma-earning peers (Bowers & Sprott, 2012; Lemon & Watson, 2011; Schoeneberger, 2012). Over 7,000 students drop out of U.S. high schools every school day (National Center for Education Statistics, 2014). Continuing to examine how at-risk students function within or without the connected world, how they view their technology identities, how they use connections to social media and personal learning networks to enhance informal learning, and how they bring informal learning strategies into the formal educational world could provide additional avenues of intervention to help lower high school dropout percentages. The recommendations that follow are drawn in part from the interviews with the 11 participants in this study.

1. Ten of the participants in this study were Caucasian and one was Hispanic. This study did not present diversity in the population of students. A study conducted in a high school with a larger and more diverse population could provide a different view of technology identity and the motivations of at-risk high schools students toward the completion of their diploma requirements. A qualitative case study following a similar format as my study could be conducted to validate, refute, or expand the knowledge gained through my work.
2. Smartphones have become ubiquitous and are beginning to dominate the technology landscape. Smartphones also play a role in the establishment of the technology identity where they are seen as a status symbol or a fashion statement (Graham, 2010). Personal learning networks are maintained through the use of smartphone technologies. A study about how schools are allowing or disallowing their use in class could shed additional light on how students operate within their personal learning networks where cell phones are prohibited during the school day.
3. My study researched three individual groups of students: those at-risk high school students who are considering dropping out, those at-risk high school students who have dropped out but returned, and those at-risk high school students who have dropped out and are considering returning in school. Individual studies could be conducted for each of the three populations for an in depth assessment of the perceptions of the role technology identity, social

media, personal learning networks, and informal learning, play in facilitating their graduation.

4. All 11 of the participants in this study used Google exclusively as their primary search engine. The school had standardized on Google for their email and document sharing service. None of the 11 participants used the available technology profile for their Google account at school. Research into how Google has come to dominate the searching world for this population of students and if a broader range of students also prefers Google as their primary search engine could show a trend toward a standardization of information. It would also be pertinent to determine if reliance on a single source for conducting a search for quality information creates a bias and homogenous result.
5. This study reported the student perceptions of the role technology identity, social media, personal learning networks, and informal learning, played in facilitating their graduation. Research could be conducted into how the teachers and professional school staff perceive these same qualities and what other technological interventions they might apply to help their students be educationally successful.

Implications for Social Change

The information shared by the participants in this study coupled with an understanding of the environment of their public charter school may provide an insight into how issues surrounding at-risk high school students and their motivations about

staying or returning to school are impacted by social media and personal learning networks. The participants provided rich details of their involvement in informal learning communities at home and at school. They described their passions for a wide variety of hobbies and interests. They also described how they were able to further those activities using YouTube, Google, and other social media venues. They all expressed that the close face-to-face relationships maintained with teachers and staff of their public charter school played an integral role in their motivation to remain involved in the pursuit of their high school diploma. Positive social change could be fostered by extending that personal contact through a school-based social media that has a similar appeal as Facebook, Skype, and YouTube. A Ning could be developed where students might post questions, share examples of their work, receive updates about assignment due dates, contact teachers, and organize activities using a format similar in design to Facebook but with greater ease for personalization and local control of content (Junco et al., 2011; Levine, Winkler, & Petersen, 2010). Teachers could be provided with a Google Voice number that would maintain their privacy but at the same time allow students to call, leave voicemail, or text. Currently students are allowed to email teachers using either the students' personal email or the school issued Google mail account. Having the ability to text, instant message, or call would provide greater connection while still maintaining teacher confidentiality.

Positive social change beyond the student, teacher, and campus level can directly impact the ability for other to enhance the technology identities through social media and personal learning networks for all students, the at-risk population in particular.

Additionally, allowing student access to social media, personal learning networks, and search engines through their smartphones provides a level of comfort, familiarity, and motivation not currently provided in many school. The current school culture in many areas views smartphones as a distraction rather than harnessing their power as a handheld laptop. Allowing students to connect their informal learning techniques to more formal learning activities while providing them guidance and context for their learning will enhance motivation, empowerment, responsibility, and collaboration. Creating connections to peers and subject matter experts will lead to an even broader framework for their educational efforts. An appropriate technology identity while maintaining a strong face-to-face connection to educational professionals and integrating social media will generate higher satisfaction with the learning process, increase motivation, and produce a stronger sense of personal identity outside the virtual world (Bingham & Conner, 2010, p. 6). These attributes will lead to increased graduation rates, higher skill levels, higher paying jobs, an increased tax base, and a well-educated populace for the U.S.

High school graduation was found to be the number one indicator for success in the adult world (Gifford, Evans, Berlin, & Bai, 2011). High school graduates earn more money over their lifetime, are better citizens, and are healthier. The globalization of the economy with the resulting movement of lower skill level jobs to other countries increases the demands for young people to become better prepared to compete on the world employment stage. Understanding and addressing how students operate within the

connected world will positively impact their educational experiences and subsequently their ability to complete their diploma requirements.

Conclusion

In my position as the campus instructional technologist (CIT) at the elementary school level, I had the opportunity to work with a wide variety of students bring technology into their lives and education. These opportunities ranged from basis computer troubleshooting and maintenance to presenting a daily internally broadcasted news show. The majority of our students were labeled at-risk. The state mandated testing system, and the software used to track students, allowed me to follow my students through the rest of their school experience. I was shocked to find that even though I felt they were well prepared for academic success the majority of them dropped out of high school or had significant difficulty completing their diploma requirements. I wondered what happened that caused this phenomena and what could be done to correct the problem.

In speaking with the participants in this study I found many of them had similar backgrounds to my students. In contrast, the students I interviewed articulated their early experiences with technology as being primarily educational games, drill and practice software, and typing skills. The techniques used for searching, evaluating, and analyzing information were self-taught in the exploration of their hobbies and interests outside of school. They were able to easily apply what those strategies to their educational endeavors. Their home and school technology identities were seamless. They accessed the same networks, social media, and knowledge tools in both realms through the use of a

technology bridge, the smartphone. This afforded them a level of comfort and familiarity providing success in the formal educational setting. The influence their social and personal contacts exerted on the completion of diploma requirements was significant but they relied primarily on face-to-face contact with the educational professionals who influenced them to complete their diploma requirements. Small class sizes, personalized attention, and weekly class meetings played a large role in assuring the students were accountable for their learning goals. This was clearly articulated by the participants who voiced their appreciation for the additional attention. Several of them were able to provide a contrast to their public high school experience expressing their great satisfaction with the charter school versus the public high school.

Several of the participants shared ideas of how they would improve communication with their teachers and other educational professionals. They expressed the desire to have their questions answered in a more timely way than through email. At the same time they indicated they were able to access their personal learning networks through a variety of social media to ask questions and share information. The interview process was enlightening for all of us particularly with regard to how social media and personal learning networks influenced the participants to work toward completing their high school diploma requirements.

Social media is a ubiquitous part of our society. Harnessing its potential to create positive influences on student learning goals could provide the impetus for school success and increase high school graduation rates. Allowing students the use of their most familiar and accessible technology, the smartphone, could provide an additional tool

promoting success. Educational professionals must embrace social media as a benefit rather than a risk. Efforts should be made to incorporate effective and appropriate social media tools into the educational setting to enhance communication, provide information, and create connections to peers and experts. Helping students establish an appropriate technology identity and fully utilize their personal learning networks through a wide range of social media sources and technology tools for the purpose of learning may provide the key for keeping them engaged in the educational process.

References

Afshar, V. (2013). CIO advice: Social media improves the user experience. *The Huffington Post.* Retrieved from http://www.huffingtonpost.com/vala-afshar/cio-advice-social-media-i_b_4153460.html

Ahn, J. (2011). Digital divides and social networking sites: Which students participate in social media? *Journal of Educational Computing Research, 45*(2), 147-163.

Alexa. (2014). Twitter.com site info. Retrieved from http://www.alexa.com/siteinfo /twitter.com

Allen, M., Naughton, J., & Ellis, R. (2011). Social learning: A call to action for learning professionals. *Learning Circuits, 65*(8), 50-56.

Arnold, N., & Paulus, T. (2010). Using social networking site for experiential learning: Appropriating, lurking, modeling and community building. *Internet and Higher Education, 13*(4), 188-196.

Baird, D. E., & Fisher, M. (2006). Neomillennial user experience design strategies: Utilizing social networking media to support "always on" learning styles. *Journal of Educational Technology Systems, 34*(1), 5-32.

Balfanz, R. (2009). Can the American high school become an avenue for advancement for all? *Future of Children, 19*(1), 17-36.

Bandura, A. (1971). *Social learning theory*. Retrieved from http://www.jku.at/org/content /e54521/e54528/e54529/e178059/Bandura_SocialLearningTheory_ger.pdf

Banks, J. A., Au, K. H., Ball, A. F., Bell, P., Gordon, E. W., Gutierrez, K. D., … Zhou, M. (2007). *Learning in and out of school in diverse environments*. Retrieved from http://depts.washington.edu/centerme/LEARNING%20LIFE%20REPORT.pdf

Barbour, A. (2013). On the wrong side of the divide. *Campus Technology, 27*(2), 2.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *Qualitative Report, 13*(4), 544-559.

Beglau, M., Hare, J. C., Foltos, L., Gann, K., James, J., Jobe, H., … Smith, B. (2011). *Technology, coaching, and community: Power partners for improved professional development in primary and secondary education* [White paper]. Retrieved from http://www.instructionalcoach.org/images/downloads/ISTE_Whitepaper_June_Final_Edits.pdf

Berliner, D. C. (2009). MCLB (Much curriculum left behind): A U.S. calamity in the making. *Phi Delta Kappan, 73*(4), 284-291.

Bicen, H., & Cavus, N. (2012). Twitter usage habits of undergraduate students. *Procedia—Social and Behavioral Sciences*, *46*, 335-339.

Bingham, T., & Conner, M. (2010). *The new social learning: A guide to transforming organizations through social media.* San Francisco, CA: Berrett-Koehler.

Blanketship, M. (2011). How social media can and should impact higher education. *Education Digest: Essential Readings Condensed for Quick Review, 76*(7), 39-42.

Blaschke, L. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *International Review of Research in Open and*

Distance Learning, 13(1), 56-71. Retrieved from http://www.irrodl.org/index.php /irrodl/article/view/1076/2087

Bobkowski, P., & Smith, J. (2013). Social media divide: Characteristics of emerging adults who do not use social network websites. *Media, Culture & Society, 35*(6), 771-781.

Boonaert, T., & Vettenburg, N. (2011). Young people's Internet use: Divided or diversified? *Childhood, 18*(1), 54-66.

Bowers, A. J., & Sprott, R. (2012). Examining the multiple trajectories associated with dropping out of high school: A growth mixture model analysis. *Journal of Educational Research, 105*(3), 176-195.

boyd, d. (2007). Why youth (heart) social network sites: The role of networked publics in teenage social life. In D. Buckingham (Ed.), *MacArthur Foundation Series on Digital Learning—Youth, identity, and digital media volume* (pp. 119-142). Cambridge, MA: MIT Press.

boyd, d. m., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, *13*(1), article 11. Retrieved from http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html

Bracey, G. W. (2009). Mandatory exit exams discourage graduation: Research does not support political claims that exit exams improve graduation results. *Phi Delta Kappan, 91*(3), 88-90.

Bridgeland, J. M., DiIulio, J. J., & Morison, K. B. (2006). *The silent epidemic: Perspectives of high school dropouts.* Retrieved from http://www.ignitelearning.com/pdf/TheSilentEpidemic3-06FINAL.pdf

Bushaw, W. J., & McNee, J. A. (2009). Americans speak out are educators and policy makers listening? The 41st annual Phi Delta Kappa/Gallup poll of the public's attitudes toward the public schools. *Phi Delta Kappan, 91*(1), 9-28.

Bushaw, W. J., & Lopez, S. J. (2012). Public education in the United States: A nation divided. The 44th annual Phi Delta Kappa/Gallup poll of the public's attitudes toward the public schools. *Phi Delta Kappan, 94*(1), 9-25.

Cain, J., & Policastri, A. (2011). Using Facebook as an informal learning environment. *American Journal of Pharmaceutical Education, 75*(10), 1-8.

Callaghan, N., & Bower, M. (2012). Learning through social networking sites-the critical role of the teacher. *Educational Media International, 49*(1), 1-17.

Carson, B. (2013, February 7). Keynote address. *National Prayer Breakfast,* Washington, D.C.

Cecil, R. (2006). *Knowledge quotations: Richard Cecil*. Retrieved from http://www.wisdomquotes.com/quote/richard-cecil.html

Charter counts: The six pillars of character. (2014) Retrieved from http://charactercounts.org/sixpillars.html

Chen, B., & Bryer, T. (2012). Investigating instructional strategies for using social media in formal and informal learning. *The International Review of Research in Open and Distance Learning, 13*(1), 1-14.

Chinn, M. D. & Fairlie, R. W. (2004). The determinants of the global digital divide: A cross-country analysis of computer and Internet penetration. *Economic Growth Center*. Retrieved from http://www.econ.yale.edu/growth_pdf/cdp881.pdf

Christensen, C., & Horn, M. B. (2008). How do we transform our schools? *Education Next, 8*(3), 12-19.

Compete. (2014). *Site profile for Twitter.com.* Retrieved from https://siteanalytics.compete.com/twitter.com#.VA52OWNWXKc

Couros, A. (2010). Developing personal learning networks for open and social learning. In G. Veletsianos (Ed.), *Emerging Technologies in Distance Education*, (pp. 109-127). Edmonton, Canada: AU Press.

Dabbagh, N., & Kitsantas, A. (2012). Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *Internet and Higher Education, 15*(1), 3-8.

Deke, J., & Haimson, J. (2006). *Valuing student competencies: Which ones predict postsecondary education and earnings, and for whom?* Retrieved from http://www.mathematicampr.com/publications/PDFs/valuestudent.pdf

Demski, J. (2009). UP Close and virtual: By adding web-based offerings to traditional in-person sessions, school districts can continue to provide support to teachers when face-to-face visits aren't possible. *THE Journal 36*(4), 18-20.

Dewey, J. (1938). *Experience and education.* New York, NY: Simon & Schuster.

Diaz, D. (2013, August 2). San Antonio girl, 13, wins national scholarship. *The San Antonio Express News*, p. 1.

DiSalvo, B. J., Crowley, K., & Norwood, R. (2008). Learning in context: Digital games and young black men. *Games and Culture, 3*(2), 131-141.

Dropout prevention: Strategies for improving high school graduation rates. (2008). Retrieved from http://www.familyimpactseminars.org/s_ncfis04report.pdf

Duckworth, A. L. (2013). True grit. *The Observer, 26(4),* 1-3.

DuFour, R. (2004). What is a "professional learning community"? *Educational Leadership, 61*(8), 6-11.

Dunlap, J. C., & Lowenthal, P. R. (2010). *Investigating Twitter's ability to enhance social presence*. Paper presented at the annual meeting of the American Education Research Association, Denver, CO.

Dunlap, J. C., & Lowenthal, P. R. (2009). Tweeting the night away: Using Twitter to enhance social presence. *Journal of Information Systems Education, 20*(2), 129-135.

Dunn, R. A. (2013). Identity theories and technology. In R. Lupppicini (Ed.), *Handbook of Research on Technoself: Identity in a Technological Society* (Vols. 1-2) (pp. 26-44). Hershey, PA: Information Science Reference.

Eynon, R., & Helsper, E. (2011). Adults learning online: Digital choice and/or digital exclusion? *New Media & Society, 13*(4), 534-551.

Ferriter, W. M. (2011). Using social media to reach your community. *Educational Leadership, 68*(4), 87-88.

Figg, C., Jaipal, K., Rinaldo, V., Mete, P., Sheerhan, T. & Smith, M. (2010). The mentor-connector project: Supporting student success with flat classroom technologies. In

D. Gibson & B. Dodge (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2010* (pp. 477-481). Chesapeake, VA: AACE. Retrieved January 13, 2014 from http://www.editlib.org/p/33382

Finley, T. (2011). *Siphoning the fumes of teen culture: How to co-opt students' favorite social media tools.* Retrieved from http://www.edutopia.org/blog/teen-culture-social-media-tools-todd-finley

Fischer, G. (2011). Understanding, fostering, and supporting cultures of participation. *Interactions, 18*(3), 42-53.

Foshay, W. (2010, May). *What is the role for the teacher in the interactive classroom?* Speech presented at American Educational Research Association, Denver, CO.

Gardner, D. P. & Larsen, Y. W. (1983). *A nation at risk: The imperative for educational reform.* Retrieved from http://eric.ed.gov/?id=ED226006

Gates, B. (2005) *National education summit on high schools*. Retrieved from http://www.gatesfoundation.org/Media-Center/Speeches/2005/02/Bill-Gates-2005-National-Education-Summit

Gee, J. P. (2000). Identity as an analytic lens for research in education. *Review of Research in Education, 25*(1), 99-125.

Gifford, B., Evans, K., Berlin, L., & Bai, Y. (2011). *America's promise alliance: 10 indicators of academic achievement and youth success.* Retrieved from http://childandfamilypolicy.duke.edu/pdfs/news/2011.7.15_AP_Child_Indicator_Report.pdf

Gobble, M. M. (2012). Motivating innovation. *Research-Technology Management, 55*(6), 66-67.

Goode, J. (2010). The digital identity divide: How technology knowledge impacts college students. *New Media & Society, 12*(6), 497-513. http://nms.sagepub.com/content/12/3/497

Graham, R. (2010). Group differences in attitudes towards technology among Americans. *New Media & Society, 12*(6), 985-1003. http://nms.sagepub.com/content/12/6/985

Greenhow, C. (2008). Connecting informal and formal learning experiences in the age of participatory media: Commentary on Bull et al. (2008), *Contemporary Issues in Technology and Teacher Education, 8*(3), 187-194.

Greenhow, C. (2011). Youth, learning, and social media. *Journal of Educational Computing Research, 45*(2), 139-146.

Greenhow, C., & Burton, L. (2011). Help from my "Friends:" Social capital in the social network sites of low-income high school students. *Journal of Educational Computing Research, 45*(2), 223-245.

Greehow, C., & Gleason, B. (2012). Twitteracy: Tweeting as a new literacy practice. *The Educational Forum, 76*(1), 463-477.

Greenhow, C., & Li, J. (2013). Like, comment, share: Collaboration and civic engagement within social network sites. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 127-141). New York: Springer.

Greenhow, C., & Robelia, B. (2009a). Informal learning and identity formation in online social networks. *Media and Technology, 34*(2), 119-140.

Greenhow, C., & Robelia, B. (2009b). Old communication, new literacies: Social network sites as social learning resources. *Journal of Computer-Mediated Communication, 14*(1), 1130-1161.

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.

Greenhow, C., Walker, J. D., & Kim, S. (2009). Millennial learners and net-savvy teens: Examining Internet use among low-income students. *Journal of Computing in Teacher Education, 26*(2), 63-69.

Gunawardena, C. N., Hermans, M. B., Sanchez, D., Richmond, C., Bohley, M., & Tuttle, R. (2009). A theoretical framework for building online communities of practice with social networking tools. *Educational Media International, 46*(1), 3-16.

Hampton, K. N., Goulet, L. S., Rainie, L., & Purcell, K. (2011). *Social networking sites and our lives.* Retrieved from http://pewinternet.org/Reports/2011/Technology-and-social-networks.aspx

Hampton, K. N., Goulet, L. S., Marlow, C., & Rainie, L. (2012). *Why most Facebook users get more than they give: The effect of Facebook 'power users' on everybody else.* Retrieved from http://pewinternet.org/Reports/2012/Facebook-users.aspx

Hepburn, A. (2010). Infographic: Twitter statistics, facts & figures [blog post]. Retrieved from http://www.digitalbuzzblog.com/infographic-twitter-statistics-facts-figures/

Herbert, M. (2012). Why all the chatter about EdChat? *District Administration, 48*(4), 51-54.

Hilton, J. (2009). Essential versus strategic IT investments. *EDUCAUSE Review, 44*(4), 8-9.

Hockly, N. (2012). Digital literacies. *ELT Journal, 66*(1), 108-112.

Hogan, M. A., & Taylor, C. J. (Eds.). (2010). *My dearest friend: Letters of Abigail and John Adams.* Cambridge, MA: Belknap Press.

Holland, C., & Muilenburg, L. (2011, March). Supporting student collaboration: Edmodo in the classroom. In *Society for Information Technology & Teacher Education International Conference* (Vol. 2011, No. 1, 3232-3236).

Hooft, M. (2013). The potential of mobile technologies to connect teaching and learning inside and outside of the classroom. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 175-186). New York: Springer.

Hsu, Y., & Ching, Y. (2011). Microblogging for strengthening a virtual learning community in an online course. *Knowledge Management & E-Learning: An International Journal, 3*(4), 585-598.

Husserl, E. (1962). *Ideas: General introduction to pure phenomenology* (W. R. Boyce Gibson, Trans.). London: Macmillan.

International Society for Technology in Education. (2007). *ISTE.NETS.S* [Fact sheet]. Retrieved from http://www.iste.org/docs/pdfs/nets-s-standards.pdf?sfvrsn=2

Ito, M., Horst, H. A., Bittanti, M., boyd, D., Herr-Stephenson, B., Lange, P. G., Pascoe, C. J., & Robinson, L. (2008). *Living and learning with new media: Summary of findings from the digital youth project.* Chicago, IL: The MacArthur Foundation.

Ito, M., Baumer, S., Bittanti, M., Boyd, D., Cody, R., & Herr, B. (2010). *Hanging out, messing around, geeking out: Living and learning with new media.* Cambridge: MIT Press.

Jahnke, I. (2010) A way out of the information jungle: A longitudinal study about a socio-technical community and informal learning in higher education. *International Journal of Sociotechnology and Knowledge Development, 2*(4), 18-38.

Jahnke, I. (2012a, September). Technology-embraced informal-in-formal-learning. In A. Ravenscroft, S. Lindstaedt, C. D. Kloos & D. Hernandez-Leo (Eds.), *21st Century Learning for 21st Century Skills.* Paper presented at 7th European Conference of Technology Enhanced Learning., EC-TEL 2012, Saarbrücken (Germany), September, 2012. (pp. 395-400). Berlin: Springer.

Jahnke, I (2012b). Informal learning via social media: Preparing for didactical design. In Tokar, A., Beurskens, M., Keuneke, S., Mahrt, M., Peters, I., Puschmann, C., van Treeck, T., & Weller, K. (Eds.), *Science and the Internet* (p. 59-72). Düsseldorf: Düsseldorf University Press.

Jargowsky, P. A. (1997). *Poverty and place: Ghettos, barrios, and the American city.* New York, NY: Russell Sage Foundation.

Jenkins, H. (2012, March 1). *Connected learning: Reimagining the experience of education in the information age.* Retrieved from http://henryjenkins.org/2012/03/connected_learning_a_new_parad.html

Jennings, J., & Rentner, D. S. (2006). Ten big effects of the No Child Left Behind Act on public schools. *Phi Delta Kappan, 88*(2), 110-113.

Jimerson, S. R., Ferguson, P., Whipple, A. D., Anderson, G. E., & Dalton, M. J. (2002). Exploring the association between grade retention and dropout: A longitudinal study examining socio-emotional, behavioral, and achievement characteristics in retained students. *The California School Psychologist, 7*(1), 51-62.

Jin, L. (2013). A new trend in education: Technoself enhanced social learning. In R. Luppicini (Ed.), *Handbook of Research on Technoself: Identity in a Technological Society* (Vols. 1-2) (pp. 456-473). Hershey, PA: Information Science Reference.

Johnson, D. (2010). Taming the chaos. *Learning and Leading with Technology, 38*(3), 20-23.

Junco, R., Heibergert, G., & Loken, E. (2011). The effect of Twitter on college student engagement and grades. *Journal of Computer Assisted Learning, 27*(1), 119-132.

Kaplan A. M., & Haenlein M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons, 53*(1), 61.

Kaplan, D., & Mossberger, K. (2012). Prospects for poor neighborhoods in the broadband era: Neighborhood-level influences on technology use at work. *Economic Development Quarterly, 26*(95), 95-105.

Kassens-Noor, E. (2012). Twitter as a teaching practice to enhance active and informal learning in higher education: The case of sustainable tweets. *Active Learning in Higher Education, 13*(1), 9-21.

Kenny, M. E., Walsh-Blair, L. Y., Blustein, D. L., Bempexhat, J., & Seltzer, J. (2010). Achievement motivation among urban adolescents: Work hope, autonomy, support, and achievement-related beliefs. *Journal of Vocational Behavior, 77*(2), 205-212.

King, K. P. (2011). Professional learning in unlikely spaces: Social media and virtual communities as professional development. *International Journal of Emerging Technologies, 6*(4), 40-46.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs: Prentice-Hall.

Kronholz, J. (2011). Getting at-risk teens to graduation. *Education Digest, 77*(6), 14-19.

Kuh, G. D. (2007). How to help students achieve. *Chronicle of Higher Education, 53*(41), B12.

Kyndt, E., Dochy, F., Onghena, P., & Baert, H. (2012). The learning intentions of low-qualified employees: A multilevel approach. *Adult Education Quarterly, 63*(2), 165-189.

Kyza, E. A. (2013). Networked technologies to foster students' collaboration and reflection. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 113-126). New York: Springer.

Laat, M., & Schreurs, B. (2013). Visualizing informal professional development networks: Building a case for learning analytics in the workplace. *American Behavioral Scientist, 57*(10), 1421-1438.

Lalonde, C. (2011). *The Twitter experience: The role of Twitter in the formation and maintenance of personal learning networks.* (Doctoral dissertation Royal Roads University).

Lalonde, C. (2012). How important is Twitter in your personal learning network? *eLearn Magazine.* Retrieved from http://elearnmag.acm.org/featured.cfm?aid=2379624

Lang, A. (2012). Exploring the potential of social network sites in relation to intercultural communication. *Arts and Humanities in Higher Education, 11*(1-2), 120-139.

Lavigne, N. C., & Mouza, C. (2013). Designing and integrating emerging technologies for learning, collaboration, reflection, and creativity. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 269-288). New York: Springer.

Lawson, M. A., & Lawson, H. A. (2013). New conceptual frameworks for student engagement research, policy, and practice. *Review of Educational Research, 83*(3), 432-479.

Leander, K. M., Phillips, N. C., & Taylor, K. H. (2010). The changing social spaces of learning: Mapping new mobilities. *Review of Research in Education, 34*(1), 329-394.

Lemon, J. C., & Watson, J. C. (2011). Early identification of potential high school dropouts: An investigation of the relationship among at-risk status, wellness, perceived stress, and mattering. *Journal of At-Risk Issues, 16*(2), 17-23.

Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). *Social media & mobile Internet use among teens and young adults.* Retrieved from http://www.pewinternet.org/files/old-media//Files/Reports/2010/PIP_Social_Media_and_Young_Adults_Report_Final_with_toplines.pdf

Lester, J. C., Rowe, J. P., & Mott, B. W. (2013). Narrative-centered learning environments: A story-centric approach to educational games. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 223-237). New York: Springer.

Levine, A., Winkler, C., & Petersen, S. (2010). The CUNY young adult program-utilizing social networking to foster interdisciplinary and cross-cohort student communication during workforce training. *Journal of Asynchronous Learning Networks, 14*(3), 73-79.

Lewin, K. (1947). Frontiers in group dynamics: Concept, method, and reality in social science; Social equilibria and social change. *Human Relations, 1*(1), 5-41.

Lewis, B., & Rush, D. (2013). Experience of developing Twitter-based communities of practice in higher education. *Research in Learning Technology*, *21*.

Lowenthal, P. R. (2010). The evolution and influence of social presence theory on online learning. In S. Dasgupta (Ed.), *Social Computing: Concepts, Methodologies,*

Tools, and Applications (pp. 113-128). Hershey, PA: Information Science Reference.

Lowenthal, P. R., & Dunlap, J. C. (2010). From pixel on a screen to real person in your students' lives: Establishing social presence using digital storytelling. *Internet and Higher Education, 13*(1), 70-72.

Luppicini, R., & Barber, P. (2013). Inside student 2.0: Student perspectives on navigating online and offline personalities. In R. Luppicini & Haghi, A. K. (Eds.), *Education for a Digital World: Present Realities and Future Possibilities* (pp. 161-184). Oakville, ON: Apple Academic Press.

Luppicini, R., & Lin, X. (2013). Student 2.0 revisited: The paradox of anonymity and identity in the digital world. In R. Luppicini & Haghi, A. K. (Eds.), *Education for a Digital World: Present Realities and Future Possibilities* (pp. 185-196). Oakville, ON: Apple Academic Press.

Luppicini, R., & Moir, J. (2013). Interweaving education, technology, and life: University student perspectives on ICTs and personal relationships. In R. Luppicini & Haghi, A. K. (Eds.), *Education for a Digital World: Present Realities and Future Possibilities* (pp. 145-160). Oakville, ON: Apple Academic Press.

Luppicini, R., & Myhill, C. (2013). Student 2.0: A look at student values in a digital age. In R. Luppicini & Haghi, A. K. (Eds.), *Education for a Digital World: Present Realities and Future Possibilities* (pp. 133-143). Oakville, ON: Apple Academic Press.

Luppicini, R. (2013). The emerging field of technoself studies (TSS). In R. Luppicini (Ed.), *Handbook of Research on Technoself: Identity in a Technological Society* (Vols. 1-2) (pp. 1-25). Hershey, PA: Information Science Reference.

Maccoby, M. (2010). The 4 Rs of motivation. *Research Technology Management, 53*(4), 60-61.

Madden, M., Lenhart, A., Duggan, M., Cortesi, S., & Gasser, U. (2013). *Teens and technology 2013*. Retrieved from http://www.pewinternet.org/files/old-media//Files/Reports/2013/PIP_TeensandTechnology2013.pdf

Mainsah, H. (2011). "I could well have said I was Norwegian but nobody would believe me": Ethnic minority youths' self-representation on social network sites. *European Journal of Cultural Studies, 14*(2), 179-193.

Mancuso, D. S., Chlup, D. T., & McWhorter, R. R. (2010). A study of adult learning in a virtual world. *Advances in Developing Human Resources, 12*(6), 681-699.

Maninger, R. M. (2006). Student test scores improved in an English literature course through the use of supportive devices. *TechTrends, 50*(5), 37-45.

Maranto, G., & Barton, M. (2010). Paradox and promise: MySpace, Facebook, and the sociopolitics of social networking in the writing classroom. *Computers and Composition, 27*(1), 36-47.

Marsick, V. J., & Watkins, K. E. (2001). Informal and incidental learning. *New Directions for Adult & Continuing Education, 2001*(89), 25-35.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370-396.

Martinez, C. A. (2012). Developing metacognition at a distance: Sharing students' learning strategies on a reflective blog. *Computer Assisted Language Learning, 25*(2), 199-212.

Mayes, T. and Fowler, C. (2006). Learners, learning literacy and pedagogy of e-learning. In A. Martin & D. Madigan (Eds.), *Digital Literacies for Learning* (pp. 29-33). London: Facet.

McCarthey, S. J., & Moje, E. B. (2002). Identity matters. *Reading Research Quarterly*, 37(2), 228-238.

Milgram, S. (1967). The small world problem. *Psychology Today, 1*(1), 61-67.

Miller, A. (2012). Disruptive and transformative education: Designing learning in the digital age. *eLearn Magazine*. Retrieved from http://elearnmag.acm.org/featured.cfm?aid=2398997

Mislove, A., Marcon, M., Gummadi, K. P., Druschel, P., & Bhattacharjee, B. (2007, October). Measurement and analysis of online social networks. In *Proceedings of the 7th ACM SIGCOMM conference on Internet measurement* (pp. 29-42). ACM.

Moje, E. B., Overby, M., Tysvaer, N., & Morris, K. (2008). The complex world of adolescent literacy: Myths, motivations, and mysteries. *Harvard Educational Review, 78*(1), 107-154.

Molony, B. (2004). *Technology & identity: Is rapidly accelerating technology eroding our sense of who we are?* Retrieved from http://www.scu.edu/sts/nexus/summer2001/MolonyArticle.cfm

Morse, D., & Jutras, F. (2008). Implementing concept-based learning in a large undergraduate classroom. *Cell Biology Education*, *7*(2), 243-253.

Mouza, C., & Cavalier, A. (2013). The role of one-to-one computing in the education of at-risk high-school students. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 145-159). New York: Springer.

Mouza, C., & Lavigne, N. (2013). *Emerging technologies for the classroom.* New York, NY: Springer.

National Center for Education Statistics. (1992). *Characteristics of at-risk students in NELS:88.* Retrieved from http://nces.ed.gov/pubs92/92042.pdf

National Center for Education Statistics. (2014). *Public high school four-year on-time graduation rates and event dropout rates: School years 2010-11 and 2011-12.* Retrieved from http://nces.ed.gov/pubs2014/2014391.pdf

National Education Association. (2009). *Making graduation a priority.* Retrieved from http://www.nea.org/assets/docs/HE/09trends26graduationapriority.pdf

National Institute of Health. (2011) *Protecting human research participants*. Retrieved from https://phrp.nihtraining.com/users/login.php

National Research Council. (2011). *Assessing 21st century skills: Summary of a workshop.* A. A. Koenig, Rapporteur. Committee on the Assessment of 21st Century Skills. Board on Testing and Assessment, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

National Telecommunications and Information Administration. (1995). *Falling through the Net: A survey of the "Have Nots" in rural and urban America.* Washington, DC: US Department of Commerce National Telecommunication and Information Administration. Retrieved from http://www.ntia.doc.gov/ntiahome/fallingthru.html

National Telecommunications and Information Administration. (1998). *Falling through the Net II: New date on the digital divide.* Washington, DC: US Department of Commerce National Telecommunication and Information Administration. Retrieved from http://www.ntia.doc.gov/report/1998/falling-through-net-ii-new-data-digital-divide

National Telecommunications and Information Administration. (1999). *Falling through the Net: Defining the digital divide.* Washington, DC: US Department of Commerce National Telecommunication and Information Administration. Retrieved from http://www.ntia.doc.gov/report/1999/falling-through-net-defining-digital-divide

Newgarden, K. (2009). Twitter, social networking, and communities of practice. *The Electronic Journal for English as a Second Language, 13*(2), 1-20.

Nielsen, B. G., & Borlund, P. (2011). Information literacy, learning, and the public library: A study of Danish high school students. *Journal of Librarianship and Information Science, 43*(2), 106-119.

Nordgren, R. D. (2013). Pink's "Motivation 3.0" and student-centered schooling: Creating life-long learners for the 21st century. *Journal of Research in Innovative Teaching, 6*(1), 3-11.

O'Cummings, M., Bardack, S., & Gonsoulin, S. (2010). Issue brief: The importance of literacy for youth involved in the juvenile justice system. Washington, DC: National evaluation and Technical Assistance Center for the Education of Children and Youth Who Are Neglected, Delinquent, or At Risk.

Owens, T. J., Robinson, D. T., & Smith-Lovin, L. (2010). Three faces of identity. *The Annual Review of Sociology, 36*(1), 477-499.

Parker, D. (2012). A better way to motivate achievement. *Leadership, 41*(4), 32-34.

Pegrum, M. (2010). Modified, multiplied, and (re-)mixed: Social media and digital literacies. In M. Thomas (Ed.), *Digital Education: Opportunities for Social Collaboration* (1-20).

Pew Internet and American Life Project. (2007). Demographics of Internet users. Retrieved from http://www.pewinternet.org/2012/09/13/additional-material-and-demographics/

Pikalek, A. J. (2010). Navigating the social media learning curve. *Continuing Higher Education Review, 74*(1), 150-160.

Pink, D. H. (2007). Revenge of the right brain. *Public Management, 89*(6), 10-13.

Pink, D. (2008). Tom Friedman on education in the "flat world": A discussion with author Daniel Pink on curiosity, passion, and the politics of school reform in the global marketplace. *School Administrator, 65*(2), 12-17.

Pink, D. (2009). *Drive.* New York, NY: Riverhead Books.

Pollara, P. & Zhu, J. (2011). Social networking and education: Using Facebook as an edusocial space. In M. Koehler & P. Mishra (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2011* (pp. 3330-3338). Chesapeake, VA: AACE. Retrieved January 13, 2014 from http://www.editlib.org/p/36833.

Rajagopal, K., Brinke, D. J., Bruggen, J. V., & Sloep, P. B. (2012). Understanding personal learning networks: Their structure, content, and the networking skills needed to optimally use them. *First Monday, 17*(1-2).

Ralph, M., & Ralph, L. (2013). Weapons of mass instruction: The creative use of social media in improving pedagogy. *Issues in Informing Science and Information Technology, 10*.

Rath, L. (2011). The effects of Twitter in an online learning environment. *eLearn Magazine.* Retrieved from http://elearnmag.acm.org/featured.cfm?aid=1944486

Ravenscroft, A. (2011). Dialogue and connectivism: A new approach to understanding and promoting dialogue-rich networked learning. *International Review of Research in Open and Distance Learning, 12*(3), 139-160.

Reardon, S. F., Atteberry, A., Arshan, N., & Kurlaender, M. (2009). *Effects of the California high school exit exam on student persistence, achievement, and graduation* (Working Paper No. 2009-12). Retrieved from http://www.stanford.edu/group/irepp/cgi-bin/joomla/working-papers.html

Reich, R. B. (1991). *The work of nations: Preparing ourselves for 21st century capitalism.* New York: Alfred A. Knopf.

Rheingold, S. (2012). Stewards of digital literacies. *Knowledge Quest, 41*(1), 52-55.

Richardson, W. (2012). Preparing students to learn without us. *For Each to Excel, 69*(5), 22-26.

Robertson-Kraft, C., & Duckworth, A. L. (in press). True grit: Trait-level perseverance and passion for long-term goals predicts effectiveness and retention among novice teachers. *Teachers College Record*.

Rodriguez, M. (2013, August, 24). Discovering your tribe on Google+: Maslow's hierarchy of Needs applied to social media. [Web log comment]. Retrieved from https://plus.google.com/115970504272079730559/posts/4BonYxJuqTX

Roth, B. F., & McCully, M. S. (2010). *Tweeting and friending in the graduate classroom: Can social media tools work?* Retrieved from http://proceedings.informingscience.org/InSITE2010/InSITE10p421-429Roth821.pdf

Ruthven, K. (2009). Towards a naturalistic conceptualization of technology integration in classroom practice: The example of school mathematics. *Education & Didactique, 3*(1), 131-152.

Schaffhauser, D. (2013). When students can't compute. *Campus Technology, 27*(2). 21-27.

Schoeneberger, J. A. (2012). Longitudinal attendance patterns: Developing high school dropouts. *Clearing House: A Journal of Educational Strategies, Issues and Ideas, 85*(1), 7-14.

Schroeder, A., Minocha, S., & Schneidert, C. (2010). The strengths, weaknesses, opportunities and threats of using social software in higher and further education teaching and learning. *Journal of Computer Assisted Learning, 26*(1), 159-174.

Senge, P. (2000). Systems change in education. *Reflections, 1*(3), 52-60.

Senge, P., Cambron-McCabe, N., Lucas, T., Smith, B., Dutton, J., & Kleiner, A. (2012). *Schools that learn.* New York, NY: Crown Business.

Senge, P., & Kim, D. H. (2013). From fragmentation to integration: Building learning communities. *Reflections, 12*(4), 3-11.

Shirky, C. (2010). *Cognitive surplus: How technology makes consumers into collaborators.* New York, NY: The Penguin Press.

Siegel, S. (2009). A meaningful high school diploma: Creating a meaningful high school diploma will expose student to the full range of adult options, which will enable them to shape their high school education in a way that connects to their current interests and stimulates the growth of new ones. *Phi Delta Kappan, 90*(10), 740-744.

Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology & Distance Learning, 2*(1), 3-10.

Siemens, G. (2006). *Knowing knowledge.* San Francisco, CA: Creative Commons.

Silseth, K., & Arnseth, H. C. (2011). Learning and identity construction across sites: A dialogical approach to analyzing the construction of learning selves. *Culture & Psychology, 17*(1), 65-80.

Slotta, J. D., & Najafi, H. (2013). Supporting collaborative knowledge construction with Web 2.0 technologies. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 93-112). New York: Springer.

Speak Up 2011. (2012). *Mapping a personalized learning journey: K-12 students and parents connect the dots with digital learning.* Irvine, CA: Author.

Squire, K. D., & Dikkers, S. (2012). Amplifications of learning: Use of mobile media devices among youth. *Convergence: The International Journal of Research into New Media Technologies, 18*(4), 445-464.

Squire, K. D. (2013). Mobile media learning: Ubiquitous computing environments for the mobile generation. In C. Mouza & N. Lavigne (Eds.), *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp. 187-202). New York: Springer.

Stake, R. E. (1995). *The art of case study research.* Thousand Oaks, CA: Sage Publications.

Stake, R. E. (2006). *Multiple case study analysis.* New York, NY: The Guilford Press.

Stake, R. E. (2010). *Qualitative research: Studying how things work.* New York, NY: The Guilford Press.

Steinfield, C., Ellison, N. B., & Lampe, C. (2008). Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. *Journal of Applied Developmental Psychology, 29*(1), 434-445.

Tay, E., & Allen, M. (2011). Designing social media into university learning: Technology of collaboration or collaboration for technology? *Educational Media International, 48*(3), 151-163.

Taylor, J. (2011, July 27). Technology: Is technology stealing our (self) identities? Who or what is defining your self-identity? [Web log comment]. Retrieved from http://www.psychologytoday.com/blog/the-power-prime/201107/technology-is-technology-stealing-our-self-identities

Texas Education Agency. (2014). *TEA Snapshot.* Retrieved from http://ritter.tea.state.tx.us/perfreport/snapshot/2013/index.html

The horizon report. (2012). Retrieved from http://www.nmc.org/pdf/2012-horizon-report-K12.pdf

Tobin, D. R. (1998). *Building your personal learning network*. Retrieved from http://www.tobincls.com/learningnetwork.htm

Tremblay, E. A. (2010). Educating the mobile generation-Using personal cell phones as audience response systems in post-secondary science teaching. *Journal of Computers in Mathematics and Science Teaching, 29*(2), 217-227.

Tyler, J. H., & Lofstrom, M. (2009). Finishing high school: Alternative pathways and dropout recovery. *The Future of Children, 19*(1), 77-96.

Tynan, J., & New, C. (2009). Creativity and conflict: How theory and practice shape student identities in design education. *Arts and Humanities in Higher Education, 8*(3), 295-308.

United Kingdom. Government Office for Science. Future of Humanity Institute. Faculty of Philosophy & Oxford Martin School, Oxford University. (2011). *The future of identity.* A report by N. Bostrom and A Sandberg. Oxford, UK.

U.S. Census Bureau. (2013). *State and county quick facts.* Retrieved from http://quickfacts.census.gov/qfd/states/48/48209.html

U.S. Census Bureau. (2012). *Educational attainment*. Retrieved from http://www.census.gov/hhes/socdemo/education/

U.S. Department of Education. (2010). *National education technology plan.* Retrieved from http://www.ed.gov/sites/default/files/netp2010-execsumm.pdf

U.S. Department of Education. (2014). *Public high school four-year on-time graduation rates: School years 2010-11 and 2011-12* [Data File]. Retrieved from http://nces.ed.gov/pubs2014/2014391.pdf

U.S. Department of Education. (2011). *The nation's report card* [Data File]. Retrieved from http://nces.ed.gov/nationsreportcard/pdf/main2011/2012459.pdf

United States Education Reform and National Security. (2012, Mar). Retrieved from http://www.cfr.org/united-states/us-education-reform-national-security/p27618

Warschauer, M. (2002). Rethinking the digital divide. *First Monday, 7*(7). Retrieved from http://firstmonday.org/ojs/index.php/fm/article/view/967/888

Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. Cambridge: MIT Press.

Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. *Review of Research in Education, 34*(1), 179-225.

Warlick, D. (2009). Grow your personal learning network: New technologies can keep you connected and help you manage information overload. *Learning & Leading with Technology, 36*(6), 12-16.

Weil, K. (2010). Measuring tweets [blog post]. Retrieved from http://blog.twitter.com/2010/02/measuring-tweets.html

Welch, M. M., & Dooley, C. M. (2013). Are your students really participating?: Taking students beyond interaction to full participation can help them get the most out of their digital tools. *Learning and Leading with Technology, 41*(2). Retrieved from http://www.iste.org/learn/publications/learning-leading/ll-may-2013/feature-are-your-students-really-participating-

Wenger, E., White, N., Smith, J. D., & Rowe, L. (2005). *Technology for communities* (CEFRIO Book Chapter–Jan 18, 2005). Retrieved from http://technologyforcommunities.com/CEFRIO_Book_Chapter_v_5.2.pdf

Whitehurst, G. J., & Whitfield, S. (2012). *Compulsory school attendance: What research says and what it means for state policy.* Retrieved from http://www.brookings.edu/~/media/Research/Files/Papers/2012/8/01%20educatio

n%20graduation%20age%20whitehurst%20whitfield/0801_education_graduation_age_whitehurst_whitfield.pdf

Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago, IL: University of Chicago Press.

Yin, R. K. (2009). *Case study research: Design and methods.* Thousand Oaks, CA: Sage Publications.

Yin, R. K. (2011). *Qualitative research from start to finish.* New York, NY: The Guilford Press.

Yu, A. Y., Tian, S. W., Vogel, D., & Kwok, R. (2010). Can learning be virtually boosted? An investigation of online social networking impacts. *Computers and Education, 55*(4), 1494-1503.

September 2, 2014

Dear Rebecca Mix Yard,

Based on my review of your research proposal, I give permission for you to conduct the study entitled The Role of Technology and Social Media in Motivating At-Risk High School Students to Complete Their High School Experience within the Katherine Anne Porter School. As part of this study, I authorize you to contact the school principal, school counselor, collect interviews, share information with the participants as a form of member checking, and disseminate results while maintaining the confidentiality of the school and participants. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include providing names and contact information to invite perspective participants and ensuring your confidentiality. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University Institutional Review Board.

Sincerely,

Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. Electronic signatures are regulated by the Uniform Electronic Transactions Act. Electronic signatures are only valid when the signer is either (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verify any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).

Appendix A: Letter of 

Cooperation

Appendix B: Adult Student Consent Form

You are invited to take part in a research study exploring the perceptions about and influences of social media, personal learning networks, technology identity, informal learning, and social learning on your educational experience. I am inviting students who are thinking of dropping out of high school, have dropped out and returned to high school, and have dropped out and are thinking of returning to high school. This form is part of the process to allow you to understand this study before deciding whether to take part.

This study is being conducted by Rebecca Yard, who is a doctoral student at Walden University.

Background Information:
The purpose of this project is to understand your thoughts about how you view your use of technology at home and at school with an emphasis on your technology identity. How you learn using social media and personal learning networks will also be explored.

Procedures:
If you agree to be a part of this project, you will be asked to:

Participate in one digitally-recorded interview of approximately one hour where you will share your personal experiences with technology, social media, personal learning networks, and learning. Review the interview after it has been converted to a Microsoft Word document to be sure it reflects the interview faithfully.

Here are some sample questions:

- Tell me about your experiences with technology.
- How would you describe your online personality at home?
- How would you describe your online personality at school?
- When you are in school and need to find information what do you do?
- How would you describe your online relationship with people who are involved in your education?

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you want to be in the study. No one at XXXXXXX School will treat you differently if you decide not to be in the study. If you decide to consent now, you can still change your mind later. Anyone who feels stressed during the study may stop at any time.

Potential Risks and Benefits of Being in the Study:

Being in this type of study involves some risk of minor discomforts that can be encountered in daily life, such as the delegation of time needed to participate in the interview. Being in this study will not pose a risk to your safety or wellbeing. Through reflections during the interview, you may gain an understanding of how social media, personal learning networks, a technology identity, and social learning can be integrated into your educational experiences to help keep you engaged in the learning process and moving toward achieving a high school diploma.

Compensation:
You will not receive any payment for participation in this study.

Privacy:
Any information you provide will be kept confidential. The researcher will not use your information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in any reports of the study. Data will be kept for a period of 5 years, as required by Walden University.

Asking Questions:
You may ask any questions you have now. If you have questions later, you may contact the researcher via telephone, XXX-XXX-XXXX, or email, rebecca.yard@waldenu.edu. If you want to talk privately about your rights as a participant, you may call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is XXX-XXX-XXXX. Walden University's approval number for this study is 10-14-14-0098786 and it expires on, October 13, 2015.

The researcher will provide a copy of this form for your records.

Statement of Consent:
I have read the above information and I feel I understand the study well enough to make a decision about my involvement in this optional research project. By replying to this email indicating my "consent," I am giving Rebecca Yard permission to contact me about the study. I understand that I am agreeing to the terms described above.

Printed Name of the Participant _____

Participant's Written or Electronic* Signature _____

Date of Consent _____

*Electronic signatures are regulated by the Uniform Electronic Transactions Act. Legally, an "electronic signature" can be the person's typed name, their email address, or any

other identifying marker. An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically.

Appendix C: Adult Student Invitation to Participate in Research Email Script

Dear _____,

Because you attend or are planning to attend the XXXXXXXXX School, I would like to invite you to participate in a research study I am conducting. The school provided your contact information because you use technology in your life outside of school. I would like to interview you to understand your experiences with technology, how you use technology at home and at school, how social networks play a role in your life, and how personal learning networks may have an impact your education. Your interview will take approximately one hour.

Before I interview you, I must receive your consent to interview you. If you are willing for me to talk with you, please read the form below and then reply to this email with the word CONSENT. This is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part in my study.

Thank you so much for your consideration,

Becky Yard

Doctoral Candidate, Walden University

rebecca.yard@waldenu.edu

XXX-XXX-XXXX

Appendix D: Adult Student Invitation to Participate in Research Telephone Script

Hello. My name is Rebecca Yard and I am contacting you today because you are a student who attends or are planning to attend the XXXXXXX School. I would like to invite you to participate in a research study I am conducting. The school provided your contact information because you use technology in your life outside of school. I would like to interview you to understand your experiences with technology, how you use technology at home and at school, how social networks play a role in your life, and how personal learning networks may have an impact your education. Your interview will take approximately one hour.

Before I interview you, I must receive your consent to interview you. If you are willing for me to talk with you would it be possible to send you an electronic form confirming this conversation? When you receive the email please reply with the word CONSENT. This is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part in my study.

Thank you so much for your consideration.

Appendix E: Interview Questions

Research Question 1: How does the development of a technology identity using social media and personal learning networks influence at-risk high school students to complete diploma requirements?

RQ 1a: How does the development of a technology identity using social media and personal learning networks influence students who are considering dropping out of school?

RQ1b: How does the development of a technology identity using social media and personal learning networks influence students who have dropped out of school but are considering returning to the classroom?

RQ1c: How does the development of a technology identity using social media and personal learning networks influence students who dropped out of school but have returned to complete their high school diploma requirements?

Questions:

1. Tell me a little bit about yourself including your hobbies, outside interests, and school experiences.
2. Tell me about your experiences with technology.
3. An online identity means the face that you present to the digital world through social media.
    a. How would you describe your online identity when engaging in activities outside of school?

   b. How would you describe your online identity when engaging in school activities?
   c. activities?
4. Are there any groups of people you know who also like (hobby or interest) that you communicate with using (social networking site)?
   a. Tell me about those groups and the kinds of communication you share.
   b. How do you use your social networking skills at school?
5. How do you think a social network helps or might help you continue to be or be more successful in school?
6. How would you describe your online relationship with people who are involved in your education?
   a. How does this relationship influence your thinking about leaving, staying, or returning to school?
   b. If there were something you could change or improve this relationship what would it be?

Research Question 2: What are the perceptions of at-risk high school students regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2a: What are the perceptions of high school students who are considering dropping out of school regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2b: What are the perceptions of at-risk high school dropouts who are considering returning to the classroom to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

RQ2c: What are the perceptions of high school dropouts who have returned to complete their high school diploma requirements regarding the use of informal personal learning networks for formal learning in the school setting?

Questions

1. You mentioned you use technology at home to (from previous question). How do you use technology to find information or solve problems about (hobby or interest)?
2. How do you use technology to find information or solve problems about topics you are covering in school?
3. How might you bring the networking skills you have learned at home into your schoolwork?
4. How do the groups of people you interact with through social media influence your ability to find information or solve problems at school?
5. What technology tools do your teachers use to help you ask and answer questions, collaborate with your classmates, interact with teachers, interact with content experts, reflect on learning, and showcase your work?

6. What technology tools would you like to see your teachers use to help you ask and answer questions, collaborate with your classmates, interact with teachers, interact with content experts, reflect on learning, and showcase your work?
7. What other information would you like to share about how technology plays a role in your learning experiences at home and at school?

Appendix F: Interview Protocol

NOTE: A conversational interview will be conducted using questions tied to the case study procedure and the research questions. As the interview progresses, probing questions will be used to assure complete understanding of participant experiences. Each interview will be tailored to the needs of the participant with their responses determining the next question. Space was provided for note taking during and after the interview. Interviews will be recorded with two digital recording devices.

Interview Guide

Thank you for meeting with me today and agreeing to participate in my study. In joining my project you will take part in this one digitally-recorded interview of approximately one hour where you will share your perceptions about and influences of social media, personal learning networks, technology identity, informal learning, and social learning on your educational experience.

The consent form you signed provided a sample of the interview questions. As a reminder, this study is voluntary. You may change your mind at any point in the interview process. If you feel stressed during the interview we may stop at any time. Everything you tell me during this project will be kept completely confidential. That means that no one else will know your name or what answers you gave.

Time of Interview:

Date:

Method: Face-to-Face Skype Telephone Facetime

Interviewer: Rebecca Yard. I am a student at Walden University, working on my doctoral degree.

Interviewee:

Position of Interviewee: Student

Brief description of study: The purpose of this project is to understand your thoughts about how you view your use of technology at home and at school with an emphasis on your technology identity. How you learn using social media and personal learning networks will also be explored. This study may provide an indication of why some students no longer feel high school is meeting their needs and how social media and personal learning networks could play a role in keeping them in school.

Interview Questions

1. Tell me a little bit about yourself including your hobbies, outside interests, and school experiences.
2. Tell me about your experiences with technology.
3. An online identity means the face that you present to the digital world through social media.
    a. How would you describe your online identity when engaging in activities outside of school?
    b. How would you describe your online identity when engaging in school activities?
4. Are there any groups of people you know who also like (hobby or interest) that you communicate with using (social networking site)?
    a. Tell me about those groups and the kinds of communication you share.
    b. How do you use your social networking skills at school?
5. How do you think a social network helps or might help you continue to be or be more successful in school?
6. How would you describe your online relationship with people who are involved in your education?
    a. How does this relationship influence your thinking about leaving, staying, or returning to school?
    b. If there were something you could change or improve about this relationship what would it be?

7. You mentioned you use technology at home to (XXX). How do you use technology to find information or solve problems about (hobby or interest)?
8. How do you use technology to find information or solve problems about topics you are covering in school?
9. How might you bring the networking skills you have learned at home into your school work?
10. How do the groups of people you interact with through social media influence your ability to find information or solve problems at school?
11. What technology tools do your teachers use to help you ask and answer questions, collaborate with your classmates, interact with teachers, interact with content experts, reflect on learning, and showcase your work?
12. What technology tools would you like to see your teachers use to help you ask and answer questions, collaborate with your classmates, interact with teachers, interact with content experts, reflect on learning, and showcase your work?
13. What other information would you like to share about how technology plays a role in your learning experiences at home and at school?

Thank you for agreeing to participate in my study. I appreciate you spending time with me today very much. Do you have any additional questions for me?

If you think of any questions later, please feel free to contact me via (medium used for the interview). Thank you!