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A Study of the Self-Determination of High School Students in a Blended Learning Environment and Meeting the Goals for 21st Century Student Outcomes

Vincent Keith Wilks
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A Study of the Self-Determination of High School Students in a Blended Learning
Environment and Meeting the Goals for 21st Century Student Outcomes

By
Vincent Keith Wilks

A Dissertation Submitted to the
Gardner-Webb University School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Gardner-Webb University
2016

Approval Page

This dissertation was submitted by Vincent Keith Wilks under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Dedication

This dissertation is dedicated to my first teachers. They are my mother, Sara M. Wilks, and my father, Thelmore Wilks, Jr., whose teachings were within the hard work I saw them do as a young child. From their examples come my work ethic, initiative, and drive. To my late maternal grandparents, James and Muriel Mayfield, and my late fraternal grandparents, Thelmore, Sr. and Lealer Wilks, who were all there in my earliest childhood memories. They provided the same bases for pride in self and exhibited in their daily walks in life how to treat people, how to work hard, and how respect for others will take you far in life. To the last of my first teachers, I acknowledge my maternal great-grandmother, Mrs. Lillie Mae Frances Elizabeth Mayfield Robinson. She has proven to be one of the most influential persons in my life as she was the sitter for my siblings and me when our mother and father worked. The insight she provided us as children would not manifest in our understanding and use until much later in life. She died at the age of 102 but never once forgot that I was a teacher even when she could not always remember my name. My first teachers are being recognized because influential people must be celebrated in the annals, so history can acknowledge their contributions.

To my wife, Joyce Wilks, my son, Vincent Wilks, II, and my daughter, Keiara Wilks, this is dedicated to you as well for your patience and support. Vincent and Keiara, I hope you will use my accomplishments as a roadmap to your academic, personal, and life aspirations and goals. To my siblings, Thelmore (Tim) Wilks, Clarence Wilks, Tanya Wilks and Brian Wilks, I dedicate this work to you and thank you for your support and encouragement throughout this journey. To my nieces, nephews, and cousins, I am one of the first in the family to accomplish this feat, but I hope not the last to take his journey, so I dedicate this to you as well.

Abstract

A Study of the Self-Determination of High School Students in a Blended Learning Environment and Meeting the Goals for 21st Century Student Outcomes. Wilks, Vincent Keith, 2016: Dissertation, Gardner-Webb University, Blended Learning/21st Century Skills/Generation Z/Self-Determination Theory

The 21st century has ushered Generation Z into every educational setting. Their expectations for how, where, and how fast they learn are as diverse their world views. With the use of electronic, mobile learning devices increasing each year, there is a noted deficiency in research to provide insight into how this computer-based learning is impacting students in high schools.

In this investigation, a self-paced, internet-based instructional program is utilized by students in a brick-and-mortar location with a certified teacher as well as anywhere the student has an internet connection and a computer device.

An internet based, five-part Likert scale survey was used to collect quantitative data for all five of the research questions in the study. Statistical analysis included paired-sample *t*-test and z-score calculations to determine the results of the hypothesis tests. A qualitative survey component was employed to further analyze two of the five research questions. The quantitative analysis indicates self-determination in a blended learning environment is greater than in the traditional learning environment with respect to competence only. Qualitative response analysis supported the quantitative data analysis for two of the research questions. Therefore, this indicated a positive perception from students in the blended learning environment for the respective areas. The qualitative responses supported the quantitative results and provided a more authentic, holistic perspective of the respective components of the research study.

The researcher recommends that practitioners in blended learning environments make a concerted effort to build awareness and develop and cultivate the noncognitive traits and soft skills that are the foundation of 21st century skills higher education that businesses and industry expect students and perspective employees to possess.

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Chapter 1: Introduction

There are high expectations for high school graduates to possess the skills to be competitive and successful in the global society. These expectations come from national influences such as No Child Left Behind Act (NCLB, 2001) legislation from President George W. Bush's administration to Race to the Top legislation from President Barack Obama's administration. The skills needed for success for the current generation are not innate and cannot be acquired through the often singular methods of instructional approaches in our traditional learning environments (Collins & Halverson, 2009; Horn & Staker, 2015; Trilling & Fadel, 2009). These skills differ greatly from the skills needed from the Baby Boomer generations, Generation X, and the Net Generation as described by Tapscott (2009). Tapscott described the current generation as Generation Z; they were born after January 1998. From Tapscott's perspective, the oldest students making up Generation Z are composed of the graduating class of 2016 from high school. The characteristics of Generation Z are still being correlated, but social and generational researchers are certain they are the second generation of digital natives. After the Net Generation, Generation X's children are found. Generation X is a generation who adapted to technology as it emerged; and their traits include but are not limited to confidence, independence, uniqueness, dependence on technology, and speed (Berkup, 2014; McCrindle, 2009). These characteristics resemble the succeeding Net Generation's traits of being the first global generation who expected choice, customization, collaboration, conversation over lecture, speed, innovation, and fun even in school (Tapscott, 2009).

The skills, as described in NCLB (2001) and Race to the Top legislation, for the current generation of learners are regarded as 21st Century Skills. Twenty-First Century

Skills have been described, defined, and framed by many educational, business, and researched-based entities with as many commonalities as there are uniquely different descriptive qualities. Most agree that the core elements of 21st Century Skills define the characteristics, traits, and qualities needed in successful workers in a global society (Johnson, 2009; Partnership for 21st Century Learning, 2015; Thoughtful Learning, 2015). Just like 21st Century Skills, blended learning is equally described, defined, and framed by many different educational, research, corporate training, and development institutions. In its most simplistic description, it is agreed on by most that blended learning is the combination of a traditional learning environment, brick-and-mortar or face-to-face, and some form of online learning (Akkoyunlu & Yilmaz Soylu, 2006; Allen, Seaman, & Garrettt, 2007; Dziuband, Hartman, & Moskal, 2004; Horn & Staker, 2015; Staker, 2011). Blended learning has been described as one of the most promising learning environments in the 21st century because it has the potential to offer the best of traditional learning environments and the best of online learning options (Allen et al., 2007; Barbour et al., 2012; Picciano & Seaman, 2009).

Blended Learning

The concept of blended learning is more complex than combining face-to-face instruction and some form of online instruction (Staker, 2011). The Sloan Consortium noted in their 2009 survey of school district administrators that nearly 1.03 million K-12 students took at least one online or blended learning course in 2007-2008 (Picciano & Seaman, 2009). The significance to this duplicated study is the 2007-2008 figures represented a 47% increase over the previous study's estimation of 700,000 students in online or blended learning courses 2 years earlier in 2005-2006 (Picciano & Seaman,

2009).

In their study, Tayebinik and Puteh (2012) chose a definition describing blended learning as a hybrid of traditional face-to-face and online learning where it is a natural extension of classroom learning. The evolution in defining the blended learning approaches brings not only the following definition but different models with specific approaches.

Blended learning is any time a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through online delivery with some element of student control over time, place, path, and/or pace. (Staker, 2011, p. 5)

Many practitioners, authors, and researchers have provided their perspective to the makeup, compilation, and meaning for blended learning as a pedagogical approach to learning. For the purpose of this study, the researcher will use Staker and Horn's (2012) definition of a Flexible Model of blended learning which is defined as, "allow students some element of control of time, place, path, and/or pace" (p. 7). More specifically, the Flex Model of blended learning is

a program in which content and instruction are delivered primarily by the internet, students move on an individual customized, fluid schedule among learning modalities, and the teacher-of-record is on-site. The teacher-of-record or other adult provides face-to-face support on a flexible and adaptive as-needed basis through activities such as small-group instruction, group projects, and individual tutoring. Some implementations have substantial face-to-face support, while others have minimal support. (Staker & Horn, 2012, p. 12)

21st Century Skills

More than ever, in the past decade, schools across America are striving to ensure their students are competitive in a global job market (Stewart, 2010). In a global society, domestic borders no longer exist to keep higher education opportunities, technology, or workforce prospects exclusive to American citizens; therefore, there is not a desire but a need for students to be competitive in this global society (Partnership for 21st Century Learning, 2015; Partnership for 21st Century Skills, Association for Career and Technical Education, and National Association of State Directors of Career Technical Education Consortium, 2010; Tapscott, 2009). Twenty-First Century Skills, learning objectives, and student outcomes have been placed at the forefront of decisions made nationally by states, by school districts, and by schools to ensure students are prepared to compete globally, in the workplace, and from a social perspective (The North American Council for Online Learning and the Partnership for 21st Century Skills, 2006).

During the administration of President George W. Bush, schools were impacted by mandates to decrease dropout rates, increase graduation rates, and to maintain Adequate Yearly Progress (AYP) as prescribed in NCLB (2001). With NCLB (2001) legislation, the federal government placed targets for improvements through increasing parental choice; state, district, and school flexibility; accountability for states, districts, and schools; and lists of other regulations and mandates.

President Barak Obama's administration made monetary proposals for innovation and improvements in schools and school districts, with legislation referred to as the Race to the Top, for positive results to improve schools (American Recovery, 2012). Schools faced all of these improvement initiatives while navigating the greatest technological

advancements in teaching, learning, education, and training that have ever been experienced (The North American Council for Online Learning and the Partnership for 21st Century Skills, 2006).

Twenty-First Century Skills in education have been defined by many national and international organizations with ties to education for-profit and nonprofit businesses and industry. Each of these entities have distinguished their definition and description of 21st Century Skills. Some of the entities have descriptors that overlap. Other entities have similar descriptors, but they go into greater depths to specify components of 21st Century Skills (Johnson, 2009; Voogt & Roblin, 2010).

The Glossary of Educational Reform defines the term 21st Century Skills as . . . a broad set of knowledge, skills, work habits, and character traits that are believed—by educators, school reformers, college professors, employers, and others—to be critically important to success in today’s world, particularly in collegiate programs and contemporary careers and workplaces. (Hidden Curriculum, 2014a, “21st Century Skills,” para. 1)

21st Century Skills are universal and they traverse all academic, workforce, and social boundaries with applications which are cohesive to each of the aforementioned entities (Hidden Curriculum, 2014a).

Thoughtful Learning is organization comprised of teachers, writers, and curriculum designers’ definition of 21st Century Skills in three main categories: learning skills, literacy skills, and life skills. Each of these categories is broken into what they describe as abilities students need for success in the 21st century. They are based on the Partnership for 21st Century Skills descriptors (Thoughtful Learning, 2015).

The North Central Regional Educational Laboratory (2003) cited that “21st century learning includes digit-age literacy, inventive thinking, effective communication and high productivity . . . within the context of rigorous academic standards” (p. 5).

The Partnership for 21st Century Skills, Association for Career and Technical Education, and National Association of State Directors of Career Technical Education Consortium (2010) developed 21st Century Skills as they apply to college and career readiness. In their collaborative document, the agreement was reached that 21st Century Skills must be based in academic knowledge as well as skills (Partnership for 21st Century Skills, Association for Career and Technical Education, and National Association of State Directors of Career Technical Education Consortium, 2010). Students must be equipped with skills to support “lifelong learning and learning how to learn” (Partnership for 21st Century Skills, Association for Career and Technical Education, and National Association of State Directors of Career Technical Education Consortium, 2010, p. 4). As well, students must have a “collective capacity to deliver results that matter” (Partnership for 21st Century Skills, Association for Career and Technical Education, and National Association of State Directors of Career Technical Education Consortium, 2010, p. 4).

Based on the collaborative efforts, references, and citations of other research sources, one of the leading groups for 21st Century Skills research is the Partnership for 21st Century Learning (Johnson, 2009; Partnership for 21st Century Skills, Association for Career and Technical Education, and National Association of State Directors of Career Technical Education Consortium, 2010; Thoughtful Learning, 2015; Voogt & Roblin, 2010). For the Partnership for 21st Century Learning (2015), 21st Century Skills

encompass the broad categories of learner outcomes and support systems. Within the category of learner outcomes, there are subcategories of key subjects; learning and innovation skills; information, media, and technology skills; and life and career skills. Those subcategories are further broken down into skillsets described as “the knowledge, skills and expertise students should master to succeed in work and life in the 21st century” (Partnership for 21st Century Learning, 2015, p. 2). Within the category of support systems, there are subcategories which include standards, assessments, curriculum, instruction, professional development, and learning environments as described by the Partnership for 21st Century Learning. Within the subcategories, there are additional descriptions that specify key concepts that benchmark success in each category (Partnership for 21st Century Learning, 2015). The full array of 21st Century Skills developed by Partnership for 21st Century Learning can be found in Appendix A.

When defining 21st Century Skills, researchers and experts have not only identified reading and mathematical literacy as essential components but communication skills, digital literacy, and more difficult evaluative elements such as lifelong learning, creative thinking, and work habits as essential 21st Century Skills. For the purpose of this study, the researcher focused on a skillset of 21st Century Skills identified as Initiative and Self-Direction by the Partnership for 21st Century Learning (2015). Initiative and Self-Direction is identified as one of the skillsets of Student Outcome. Initiative and Self-Direction is further broken down into elements of management of time and goals, working independently, and being a self-directed learner.

More than any other time in history, students live in a global society that is more fluid and dynamic with respect to economics, communications, technology, and

accessibility to resources (North Central Regional Educational Laboratory, 2003; Partnership for 21st Century Skills, Association for Career and Technical Education, and National Association of State Directors of Career Technical Education Consortium, 2010). The focus on 21st Century Skills provides a platform to identify needed knowledge, skills, and proficiencies for success in work and life in the 21st century. The basis of this success hinges on the use of technology and its use and innovations in education (North Central Regional Educational Laboratory, 2003).

Self-Determination Theory (SDT)

For the purpose of the study, the researcher utilized a theoretical framework of motivation developed by Richard L. Ryan and Edward M. Deci which has been supported and refined over 3 decades through studies by various researchers around the world in fields such as psychology, education, sports, work training, and healthcare (Theory, 2015). SDT focuses on the study of human motivation and personality through empirical methods taking into account the social environments and conditions that impact a person's development, performance, and well-being. Three basic psychological needs of relatedness, competence, and autonomy have been identified through research as the positive process that fosters self-motivation and personality integration (Deci & Ryan, 2008; Ryan & Deci, 2000a). Deci, Vallerand, Pelletier, and Ryan (1991) defined relatedness as having a satisfying connection to others in a social environment. Further, the researchers defined competence as attaining satisfactory performance and outcomes from endeavors. Deci et al.'s (1991) definition of autonomy is being "self-initiating" (p. 327) and "self-regulating" (p. 327) in one's actions. Together, the three basic needs of relatedness, competence, and autonomy are referred to as being synonymous with self-

determination (Deci et al., 1991). “Simply stated, motivation, performance and development will be maximized within social context that provide people the opportunity to satisfy their basic psychological needs for competence, relatedness and autonomy” (Deci et al., 1991, p. 328).

South Carolina State Standards

This study was based in the twelfth largest public school district in the state of South Carolina. This designation was based on the district’s 135-day enrollment for 2015 (South Carolina Department of Education [SCDE], 2015). The State of South Carolina’s educational system is directly influenced by several agencies whose membership includes elected and appointed officials as well as agencies created by business, industry, and the other stakeholders. SCDE is led by the State Superintendent position, which is the only elected position in SCDE (South Carolina Legislative Council, 2015). SCDE includes divisions Operations and Support, Innovation & Effectiveness, and College & Career Readiness. SCDE and the Office of the State Superintendent are responsible for overseeing the creation and updates to the state’s kindergarten through twelfth-grade curriculum and standards with approval from the legislatively appointed State School Board of Education and the South Carolina Education Oversight Committee (South Carolina Legislative Council, 2014).

In 2014, South Carolina was one of seven states in the nation to not adopt the Common Core Standards that were developed in a collaboration of the National Governors Association Center for Best Practices and the Council of Chief State School Officers (2015) in 2009. Act 200 was signed by the governor on May 30, 2014 and made effective on June 19, 2014, requiring SCDE to facilitate the process of “developing new

college and career readiness English/language arts and mathematics state content standards” (South Carolina Code of Laws, 2016, “Section 59-18-350,” para. B). The new standards addressed math and English language arts and now encompass skills such as inquiry-based literacy and content as well as process standards in mathematics to ensure students have the greatest opportunity to develop and exceed the world-class knowledge, skills, and life and career characteristics identified in the Profile of the South Carolina Graduate (Appendix B). Those profiled skills are skills identified earlier as 21st Century Skills.

Background on the Environment for this Study

In 2003, as hybrid and blended learning instructional models were initiated nationally, a public school district in South Carolina developed a blended learning program to serve high school students who desire flexibility to attain one or multiple courses to progress toward graduation. For the purpose of this study, the blended learning program will be referenced as the Soar Program. The Soar Program is not a school as defined by SCDE. The Soar Program offers opportunities for high school students to take courses while they are dually enrolled in a home-base school within the school district that awards Carnegie Units towards graduation.

The Soar Program first utilized WebCT and teacher-created courses as the platform for online course delivery. The online instructional delivery platform converted from WebCT to Apex Learning in 2009. After 6 years on Apex Learning, the online instructional delivery platform was converted to GradPoint in 2015 to provide the internet based instructional platform for the Soar Program. The key aspects of the Soar Program include flexibility to provide a self-paced style, flexible access, and mastery-based

curriculum. The program operates in an online instructional environment with face-to-face assistance from certified and highly qualified teachers in each content area. Students can access and complete the online curriculum by logging into the password secured website from a computer onsite or away from the program's facility (W. Wolff, personal communication, September 1, 2015).

The Soar Program is available for students who require credit recovery, who desire acceleration for early graduation, who are disengaged with traditional school setting, who are teen parents, who have a medical condition, and/or those who have course scheduling conflicts. The Soar Program does not accept expelled students or students with severe discipline or attendance issues. Students must be in good standing with discipline and attendance for one full semester in their home-base school before their application will be considered for admission (W. Wolff, personal communication, September 1, 2015).

Students are not assigned to the Soar Program, but they must apply and interview for admission with a recommendation from a school official, a parent, or another adult involved in the student's life. Students have the flexibility to attend classes during the traditional timeframe of a school day on a full-time or part-time basis. Students can also choose to attend one or two additional evening classes after the regular school hours. Bus transportation is provided from each high school at the end of the regular school day to the Soar Program.

During the 2015-2016 school year, the Soar Program offered students course opportunities in all four core academic areas of mathematics, science, social studies, and English. In addition, students were able to take courses to fulfill graduation requirements

in other mandated areas of physical education and health, and there were selected elective courses offered. Table 1 denotes the course offerings provided by 14 certified staff members in the Soar Program (W. Wolff, personal communication, May 26, 2016).

Table 1

Disciplines, Course Titles, and Certified Staff

Discipline	Course Title	Certified Staff
Mathematics	Foundations of Algebra—Tech Prep	3
	Intermediate Algebra—Tech Prep	
	Algebra II—College Prep	
	Algebra II—Honors	
	Math Tech III—Tech Prep	
	Geometry—College Prep	
	Geometry—Honors	
	Math Teach IV—Tech Prep	
	Statistics—College Prep	
	Pre-Calculus—College Prep	
	Pre-Calculus—Honors	
Science	Biology I—College Prep	2
	Biology II—College Prep	
	Earth Science—College Prep	
	Environmental Science—College Prep	
	Physical Science—College Prep	
	Physics—College Prep	
Social Studies	World Geography—College Prep	2
	Survey of American History—College Prep	
	American History & Constitution—College Prep	
	Government and Economics—College Prep	
	Government and Economics—Honors	
English	English I—College Prep	2
	English II—College Prep	
	English II—Honors	
	English III—College Prep	
	English III—Honors	
	English IV—College Prep	

(continued)

Discipline	Course Title	Certified Staff
Special Education Services	Intenerate Services	1
Physical Education	Physical Education	1
Other Courses	Creative Writing	English
	Law Related Education	Social Studies
	Psychology	Social Studies
	Sociology	Social Studies
	Financial Literacy (1/2 Credit)	Social Studies
	Health (1/2 Credit)	Physical Education

This researcher proposed to base this study on high school students matriculating in a South Carolina school district. The school district has three high schools with a combined average student population of 5,111 over 4 years from 2009 to 2013 (SCDE, 2014). The three high schools operate on a four-by-four semester block schedule for the fall semester and for the spring semester. From 2004 through 2015, the Soar Program served 5,233 students in its combined offerings. The students attending this program have earned over 7,729 Carnegie Units towards graduation since its beginning in 2004. (W. Wolff, personal communication, March 7, 2016).

Nature of the Problem

The vast majority of research conducted on e-learning, hybrid, or blended learning environments has been done in the postsecondary level or in a training setting (Clayton, Blumberg & Auld, 2010; Garrison & Anderson, 2003; Means, Toyama, Murphy, Bakia, & Jones, 2009; Staker, 2011). In the first decade of this millennium, Staker (2011) reported a tremendous increase in online course offerings in the K-12

setting. Nationally in 2000, approximately 45,000 students took a formal online course in the K-12 setting. By 2010, over four million students took some type of formal online learning program in a K-12 setting. School districts are offering individual courses in online environments, and more companies have realized the increased economic possibilities of producing and offering online courses for the K-12 education environment. The largest growth in online learning curriculum is seen in the for-profit companies who reported in 2011 that online and blended learning opportunities existed in all 50 states including the District of Columbia in the K-12 setting (Watson, Murin, Washaw, Gemin, & Rapp, 2011). Additionally, Barbour et al. (2012) reported that 35 of 54 countries surveyed indicated that online and blended learning is available to some of their students. Despite the upward trend in use by K-12 schools, some research suggests there is a lack of evidence on the success of blended learning. O'Dwyer, Carey, and Kleiman (2007) reported,

The current lack of sound empirical evidence about the impacts of online learning in K–12 settings is troublesome given the widespread and growing use of online models for teaching, learning and teacher professional development and the costs incurred from limited school budgets to support its use. (p. 75)

Lemley, Schumacher, and Vesey (2014) identified similar gaps in the research as well. The researchers specify a lack in the area for “the needs and perceptions of secondary school students focus on the use of technology or the physical space in which student are learning” (Lemley et al., 2014, p. 104). This lack of research led to a study to attain information on “which learning environment best address the needs of 21st-century student” (Lemley et al., 2014, p. 104). The researchers performed a mixed-methods study

on approximately 1,395 eleventh-grade students in a suburban district in southeast Texas. The researchers focused on “secondary students’ perceptions of the learning environment and which aspects of the learning environment suit them best” (Lemley et al., 2014, p. 104).

Purpose of the Study

At the beginning of the 2013-2014 school year, the South Carolina district in which this study was based embarked on an expansive one-to-one computing initiative. For the purpose of this study, the researcher refers to the district’s one-to-one initiative as Project One. The district developed fiscal and instructional plans to impact students in elementary through secondary schools. At its inception, Project One provided iPads to students in fourth through eighth grades and an allocation of 350 iPads to each of their three high schools. In the spring of 2015, the school district successfully passed a \$110 million bond through a public vote. The passing of the bond allowed the school district to allocate more than \$5 million dollars per year for 5 consecutive years to improve student access to one-to-one computing devices as well as improving technology infrastructure in all schools. During the 2015-2016 school year, each high school student was given the opportunity to check out a laptop computer for use at school and home. Project One was expanded to include third-grade students who received an iPad for use at school and home (S. Thompson, personal communication, March 8, 2016).

Tapscott (2009), McCrindle (2009), and Berkup (2014) found that students in the first decade of the 21st century are different from students in previous generations with respect to their expectations, access to information, and their outlook on the world. Twenty-First Century Skills provide a framework for preparing this new generation of

learners for the global future including careers, an economic system, and social perspective that is ever changing (Partnership for 21st Century Learning, 2015). The foundation to implement the 21st Century Skills for a new generation of learners is the educational approaches employed to facilitate the acquisition of the identified skills needed to prepare students for their ever-changing world. For the purpose of this study, computer-based educational environments, in particular blended learning environments, are being studied for the opportunity to engage students in educational experiences “with some element of student control over time, place, path and/or pace” (Staker & Horn, 2014, p. 288).

These elements, as defined by Staker and Horn (2014), correlate with a specific area within the category of 21st Century Student Outcomes located in Partnership for 21st Century Learning (2015). Within this category, a subcategory for Life and Career Skills identify the specific area of Initiative and Self-Direction as an important 21st Century Student Outcome for success. Within the area of Initiative and Self-Directions, there are three outcome goals including managing goals and time, working independently, and being a self-directed learner (Partnership for 21st Century Learning, 2015).

SDT research has established the connection between satisfying the basic needs of relatedness, competence, and autonomy in promoting successful outcomes in development, performance, and well-being (Ryan & Deci, 2000a). These three SDT outcomes align with the outcomes of 21st century student outcomes of managing goals and time, working independently, and being a self-directed learner. Students must be given the opportunity to develop skills to manage goals and time. They need to be

allowed to exhibit skills to perform independently in work opportunities and must also feel a sense of well-being in their self-directed learning experiences.

Project One is like other districts' initiatives that have attempted to capitalize on the momentum created by computer-based learning environments. As stated most recently in research by Lemley et al. (2014), there is a gap in the research surrounding secondary students pertaining to "which learning environment best addresses the needs of 21st-century students" (p. 104). As stated earlier, there is also a lack of research on the impact of blended learning environments in the K-12 learning environment. This study investigated the self-determination of high school students in a blended learning environment and meeting 21st century outcomes to provide insight for researchers and practitioners in these areas.

Research Questions

The focus district for this research study is an example of one of many districts that have capitalized on the momentum created by computer-based learning environments. As stated, there is a lack of research on the impact of blended learning environments in the K-12 learning environment. This study investigated the difference in student self-determination in a blended learning environment and student self-determination in the traditional learning environment while meeting the 21st Century Student Outcomes of Time and Goal Management, Working Independently, and Self-Directed Learning.

In order to investigate the difference in student self-determination in a blended learning environment and student self-determination in the traditional learning environment and meeting the 21st Century Student Outcomes, the following research

questions were used.

1. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to autonomy?
2. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to competence?
3. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to relatedness?
4. Does the blended environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Goal and Time Management?
5. Does the blended environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Working Independently and Self-Directed Learning?

Type of Study

The researcher used a mixed-methods approach to conduct the investigation for this study. The researcher utilized a sample population from students who attended the Soar Program in the evening and who were concurrently enrolled in classes at their home-base school. A qualitative survey method was used to collect data for Research Questions 1, 2, and 3. A mixed method, including a qualitative survey as well as quantitative survey questions, was employed to collect data for Research Questions 4 and

5 of the study. Demographic data such as age, grade level, gender, ethnicity, first language, self-reported grade point average for blended learning courses, self-reported overall grade point average, number of courses previously completed in the blended learning program, and did the student receive special education services were collected to describe the sample population.

Definition of Key Terms

Apex Learning. A for-profit web based instructional management option offering blended and virtual learning solutions to schools.

AYP. The standardized progress a student should show over the course of 1 year in a core course of study for kindergarten through twelfth-grade students as outlined in NCLB (2001).

Baby Boomer Generation. Those individuals born after World War II from 1946 to 1964 when there was an increase in the birthrate in the United States.

Carnegie Unit.

A system developed in the late nineteenth and early twentieth centuries that based the awarding of academic credit on how much time students spent in direct contact with a classroom teacher. The standard Carnegie unit is defined as 120 hours of contact time with an instructor—i.e., one hour of instruction a day, five days a week, for 24 weeks, or 7,200 minutes of instructional time over the course of an academic year. (Hidden Curriculum, 2014b, “Carnegie Unit,” para. 1).

Digital natives. A person born during the age of digital technology and having access to it all during his or her life.

Four-by-four block schedule. Students take four courses in the fall semester and

four different courses in the spring semester of a school year to satisfying the requirements for graduation from high school.

Generation X. Those individuals born after 1964 until the early 1980s and characterized as being the laidback generation.

Generation Z. Individuals born from 1998 until the present. This generation has not only grown up with the World Wide Web, but it was ubiquitous for them with mobile devices as toddlers.

GradPoint. A for-profit web based instructional management option offering blended and virtual learning solutions to schools.

Home-base school. The school of record where a student is enrolled and where the student is awarded credits towards graduation.

Highly qualified teachers. To improve teacher quality, NCLB (2001) required all teachers teaching core subject academic areas to demonstrate competency in the areas for which they will provide instruction to students (U.S. Department of Education, 2015).

Net Generation. The cohort of young people born between 1982 and 1991 who have grown up in an environment in which they are constantly exposed to computer-based technology. It has been suggested that their methods of learning are different from those of previous generations (National Center for Biotechnology Information, 2015).

NCLB. Legislation put in place by President George W. Bush's administration in 2002; updated the Elementary and Secondary Education Act—effectively scaled up the federal role in holding schools accountable for student outcomes.

Teacher-of-record. The teacher who is officially responsible for assuring all requirements are satisfied to award a credit for a course.

WebCT. A web-based platform where teacher-created courses are stored for access by students to facilitate instruction and assessment.

Summary

A new generation of learners with new and unique needs and expectations have entered the classrooms of schools around the nation. They will be required to utilize opportunities, technology, and environments that have yet to be discovered or created. How do current educational environments prepare them to traverse these unknown dimensions? Imparting 21st Century Skills and utilizing technological advancements will offer opportunities to prepare this generation of learners in ways that have never been available before. Blended learning environments offer opportunities to merge some of the best components of 19th and 20th century instructional methods with the global options technology now offers. The key is to support viable educational research that validates the best opportunities for student successful preparation in a K-12 learning environment. The researcher reinvestigated Lemley et al.'s (2014) study to examine the best learning environments for 21st century students at the secondary level.

Chapter 2: Literature Review

Technology has impacted every facet of everyday life. From technologically savvy homes to communication with no speech, no wires, and even no words, all illustrate how technology has impacted everyday life. Although often slow and behind in the latest innovations, teaching and learning are ever changing by the technological innovations (Muir-Herzig, 2004). The purpose of this study was to identify the impact of blended learning on the self-determination of students as it relates to 21st Century Student Outcomes. A review of literature to investigate current characteristic traits of high school students, the components of blended-learning, the 21st Century Student Outcomes, and Self-Determination attributes are discussed to better understand the vital components that impacted this study.

Characteristics of Current High School Students

The metaphors “digital natives” and “digital immigrant” coined by Prensky’s (2001a) work, which was part one of a two-part series, have been used by authors, politicians, and researchers alike to describe the divide in the generations born before and after 1980. Kivunju (2014), a researcher in pedagogy and educational leadership, examined Prensky’s premise of the digital native as a new learning theory approach. Kivunju stated that Prensky’s premise had justification because those born after 1980 came into a world with expanded technological influences which impacted what they learn, where they learn, and how fast information is accessible. “A learning theory is simply an attempt to describe or explain how people learn” (Kivunja, 2014, p. 94). Prensky (2001a) contended that in the 1990s, which precedes his work, students spent on average two times as many hours playing video games as reading and two times as many

hours watching television as playing video games. The emails and instant messages these students exchanged were estimated to be over 200,000 (Prensky, 2001b). Further, Prensky (2001b) went on to state because of the “ubiquitous environment” that students “think and process information fundamentally differently from their predecessors” (p. 1).

Prensky’s (2001a and 2001b) descriptions are now 15 years old and describe the first set of digital natives, the Net Generation, where texting was still commonly referred to as instant messaging, and social media as it is now known had not been launched (McCrinkle, 2009). In 2001, the Pew Research Group, a nonpartisan, nonadvocacy, social science researcher group, surveyed 754 twelve- through 17-year olds about their internet usage to find 94% saying they access the internet for school research; and 41% email or instant message classmates or teachers for help (Lenhart, Simon, & Graziano, 2001).

The introductions of Facebook in 2004, YouTube in 2005, Twitter in 2006, and Instagram and Pinterest in 2010 have not only impacted socialization and communication, but some of these social media outlets have transformed the formal educational realm of the current high school students, Generation Z (Berkup, 2014). Lenhart (2015) surveyed 1,060 thirteen- through 17-year olds from September 2014 to March 2015 along with 16 online and face-to-face focus groups on the teens’ technology access and social media interactions. Twenty-four percent of those surveyed reported going online “almost constantly” (Lenhart, 2015, p. 2) with the use of smartphones, while 56% reported going online “several times daily” (Lenhart, 2015, p. 2); 12% report going online “once daily” (Lenhart, 2015, p. 2); 6% report going online “weekly” (Lenhart, 2015, p. 2); and 2% report going online “less often” (Lenhart, 2015, p. 2). Seventy-one

percent of teens surveyed reported using more than one of the seven top social media sites noted. Social media sites such as Facebook, Instagram, and Snapchat received the highest percentages of usage with 71%, 52%, and 41% respectively.

For current high school students, Generation Z, YouTube first provide worldwide access to free educational resources through Khan Academy. Khan Academy set the stage for anytime access to specific academy assistance to any student with web access on just about any academy subject (Dreifus, 2014). “Generation Z are the most materially endowed, technological saturated, globally connected, formally educated generation our world has ever seen” (McCrindle, 2009, p. 15). “The age at which we first use technology determines how embedded it becomes in our lifestyle . . . having used technology from the youngest age, has seamlessly integrated technology into almost all areas of their lives” (McCrindle, 2009, p. 15). McCrindle (2009) cited that Generation Z is the first true global generation with the proliferation of mobile accessibility. One in four adults from Generation X achieved a university degree, but McCrindle also forecasted one in two Generation Z adults will achieve a university degree in schools where teachers are not the center of learning but in more interactive learning environments.

Current high school students, as a part of the Digital Natives and the Net Generation, have been described as having preferences such as “freedom of choice . . . customize . . . personalize . . . natural collaborators . . . enjoying a conversation, not a lecture . . . openness . . . fun, even at work and at school . . . a need for speed and speed is normal for them . . . innovators and for them innovation is part of life” (Tapscott, 2009, pp. 34-36). These descriptors extend to learning environment descriptors as well. Very few researchers except Prensky (2001a and 2001b) and McCrindle (2009) include high

school students' preferences in their research. There is a noticeable gap in research investigating high school student preferences in learning environments in 21st century classrooms also noted by Lemley et al. (2014).

In an attempt to fill a gap in research pertaining to 21st century learning environments for secondary students, Lemley et al. (2014) investigated the topic and published the results of the mixed-method study. The major themes of autonomy, relevance, and connection emerged from the qualitative investigation “regarding student satisfaction and student-teacher relationship” (Lemley et al., 2014, p. 113). Pertaining to autonomy, students found the learning environment to be more enjoyable if they had a greater amount of choice and authority of the learning process. Choice included but was not limited to where they sat in class, who they worked with in class, when they had classes, and class materials. From the study, the aspect of relevance revealed “relevance of material, presentation, and teacher competence as critical to satisfaction and student-teacher relationship” (Lemley et al., 2014, p. 113). Also, “teachers who were competent in both curriculum and presentation added to the value of the class” (Lemley et al., 2014, p. 113). As well, there was “a respect for teachers who were excited and enthusiastic about the material, many saying that content did not matter” (Lemley et al., 2014, p. 114). As for connection, “students perceived connection in the form of two-way conversations, respect, care, teacher knowledge of the student, and teacher willingness to share personally with the class as key aspects of a positive learning experience” (Lemley et al., 2014, p. 114).

Blended Learning Environment in Secondary School

Traditional or face-to-face environment in secondary schools. A learning

environment is composed of many different components, characteristics, and distinctions. Physical, social, organizational, and human attributes make up the major aspects of a learning environment and each have nuances that impact the perceptions, attitudes, and viewpoints of individuals in a learning environment (Liang, Hsu, Huang, & Chen, 2012). A traditional learning environment has characteristics that have held true for most K-12 and university environments for most of the 19th and 20th centuries. Instruction takes place in a stationary location, most often referred to as brick and mortar buildings. Instruction is predominately, if not exclusively, teacher led with isolated core courses in mathematics, English, science, and social studies (Muir-Herzig, 2004). Textbooks most often provide the direction and serve as the major academic resource. The traditional or face-to-face learning environment moves at a singular pace and is time restrictive at the teacher's discretion providing a one-size-fits-all approach to instruction and learning (Mogus, Djurdjevic, & Suvak, 2012). The physical environment most often consists of desk or tables in rows with everyone facing the same direction. Often, time restrictive, singular modality, paper, pencil assessments provide formative and summative evaluations of student progress towards federal, state, and/or local academic goals (Kazu & Demirkol, 2014). Very little, if any, personalization accommodations are made to facilitate interest, learning styles, or personal goals of the students (Fisher & Baird, 2005; Wangpipatwong & Papsratorn, 2007).

Galloway and Lasley (2010) investigated a traditional high school learning environment in an urban setting. The researchers noted there is a focus on improving learning while taking into account personalization in the learning environment. In this study, it was found that teachers in the classroom must make a more deliberate, concerted

effort to engage students around their interest of what they learn in the class setting. “Through this process of sharing, teachers are encouraging students to enter into an important process of thinking about thinking. It means openly talking about what you do and do not understand in assignments and work that is performed” (Galloway & Lasley, 2010, p. 278). This is impactful on student achievement and success in the learning environment because “how they think and how they process knowledge is a primary key. These exchanges between teacher and student require a different communicative approach than existed in the past” (Galloway & Lasley, 2010, p. 280).

E-learning/hybrid learning/virtual learning in secondary schools. Since the mid-1990s, computer-based instruction has been defined by many names, specifications, and descriptions. The names include but are not limited to blended learning, hybrid instruction, e-learning, hybrid learning, mediated learning, mixed-mode instruction, web-enhanced instruction, and web-assisted instruction (Delialioglu & Yildirim, 2007; Dziuband et al., 2004). As early as 2000, the technological advancements using the World Wide Web were described as the e-Learning Revolution (Galagan & Drucker, 2000). More recently, the u-learning descriptor has emerged. The “u” in this descriptor stands for ubiquitous which utilizes the advancements and accessibility of handheld, wireless, digital technology (Yahya, Ahmad, & Jalil, 2010). Each computer-based, instructional delivery system has variations in pedagogical methodologies, and each can be seen as a successor of distance learning (Allen et al., 2007). Distance learning encompasses correspondence education starting with mail delivery in the 18th century. Correspondence education was first introduced through the use of radio and later through television broadcast from the 1920s to 1960s. Prerecorded video broadcast was used in

the 1970s and 1980s which evolved into teleconferencing in the 1980s and 1990s (Harper, Chen, & Yen, 2004). Each evolution utilized the technology of its time period to revolutionize educational possibilities for students and instructors but most importantly to reduce the cost to educational institutions (Harper et al., 2004).

In the past decade, no aspect of computer-based instruction has gained more interest and usage than the area of blended or hybrid learning (Delialioglu & Yildirim, 2007; McGee & Reis, 2012; Staker, 2011; Stake & Horn, 2012). Singh and Reed (2001) characterized blended learning as a learning program which utilized more than one delivery modality and optimized learning outcomes and delivery cost. “Blended learning focuses on optimizing achievement of learning objectives by applying the ‘right’ learning technologies to match the ‘right’ personal learning style to transfer the ‘right’ skills to the ‘right’ person at the ‘right time’” (Singh & Reed, 2001, p. 2). Blended learning is described as providing an ideal advantageous combination of flexibility that an online learning environment provides with the social interaction a face-to-face learning environment provides (Akkoyunlu & Yilmaz Soylu, 2006).

Because blended learning was not just one static delivery system, models were developed to describe the different forms of blended learning that were emerging. In Table 2, the model descriptors include Face-to-Face Driver, Rotation, Flex, Online Lab, Self-Blend, and Online Driver (Staker, 2011).

Table 2

Blended Learning Models and Descriptions 2011

Models	Descriptions
Face-to-Face Driver	The programs that fit in the face-to-face-driver category all retain face-to-face teachers to deliver most of their curricula. The physical teacher deploys online learning on a case-by-case basis to supplement or remediate, often in the back of the classroom or in a technology lab.
Rotation	The common feature in the rotation model is that, within a given course, students rotate on a fixed schedule between learning online in a one-to-one, self-paced environment and sitting in a classroom with a traditional face-to-face teacher. It is the model most in between the traditional face-to-face classroom and online learning because it involves a split between the two and, in some cases, between remote and onsite. The face-to-face teacher usually oversees the online work.
Flex	Programs with a flex model feature an online platform that delivers most of the curricula. Teachers provide on-site support on a flexible and adaptive as-needed basis through in-person tutoring sessions and small group sessions. Many dropout-recovery and credit-recovery blended programs fit into this model.
Online Lab	The online-lab model characterizes programs that rely on an online platform to deliver the entire course but in a brick-and-mortar lab environment. Usually these programs provide online teachers. Paraprofessionals supervise, but offer little content expertise. Often students that participate in an online-lab program also take traditional courses and have typical block schedules.
Self-Blend	The nearly ubiquitous version of blended learning among American high school students is the self-blend model, which encompasses any time students choose to take one or more courses online to supplement their traditional school's catalog. The online learning is always remote, which distinguishes it from the online-lab model, but the traditional learning is in a brick-and-mortar school. All supplemental online schools that offer a la carte courses to individual students facilitate self-blending.
Online Driver	The online-driver model involves an online platform and teacher that deliver all curricula. Students work remotely for the most part. Face-to-face check-ins are sometimes optional and other times required. Some of these programs offer brick-and-mortar components as well, such as extracurricular activities (Staker, 2011).

(Staker, 2011)

In just 1 year, Staker and Horn (2012) clarified and refined the models and the descriptors of blended learning for the K-12 sector with a focus on making the definition flexible as “the field continues to innovate” (p. 3).

Blended Learning is a formal education program in which a student learns at least part through online delivery of content and instruction with some element of student control over time, place, path and/or pace and at least in part at a supervised brick-and-mortar location away from home. (Staker & Horn, 2012, p. 3)

In Staker and Horn’s (2012) clarification, the models were specified as the Rotational Model, Flex Model, Self-Blend Model, and Enriched Virtual Model where the Rotational Model was broken into subareas of Station-Rotation, Lab-Rotation, Flipped-Classroom, and Individual-Rotation. The descriptions are provided in Table 3.

Table 3

Blended Learning Models and Descriptions 2012

Model	Description
Rotational Models	A program in which within a given course or subject (e.g., math), students rotate on a fixed schedule or at the teacher's discretion between learning modalities, at least one of which is online learning. Other modalities might include activities such as small-group or full-class instruction, group projects, individual tutoring, and pencil-and-paper assignments.
-Station-Rotation	A Rotation-model implementation in which within a given course or subject (e.g., math), students rotate on a fixed schedule or at the teacher's discretion among classroom-based learning modalities. The rotation includes at least one station for online learning. Other stations might include activities such as small-group or full-class instruction, group projects, individual tutoring, and pencil-and-paper assignments. Some implementation involves the entire class alternating among activities together, whereas other divide the class into small-group or one-by-one rotations. The Station-Rotation model differs from the Individual-Rotation model because students rotate through all of the stations, not only those on their custom schedule.
-Lab-Rotation	A Rotation-model implementation in which within a given course or subject (e.g., math), students rotate on a fixed schedule or at the teacher's discretion among locations on the brick-and-mortar campus. At least one of these spaces is learning lab for predominantly online learning, while the additional classroom(s) house other learning modalities. The Lab-Rotation model differs from the Station-Rotation model because students rotate among locations on the campus instead of staying in one classroom for the blended course or subject.
-Flipped-Classroom	A Rotation-model implementation in which within a given course or subject (e.g., math), students rotate on a fixed schedule face-to-face teacher-guided practice (or projects) on campus during the standard school day and online delivery of content and instruction of the same subject from a remote location (often home) after school. The primary delivery of content and instruction is online, which differentiates a Flipped Classroom from students who are merely doing homework practice online at night. The Flipped-Classroom model accords with the idea that blended learning includes some element of student control over time, place, path, and/or pace because the model allows students to choose the location where they receive content and instruction online and to control the pace at which they move through the online elements.
-Individual-Rotation	A Rotation-model implementation in which within a given course or subject (e.g., math), students rotate on an individually customized, fixed schedule among learning modalities, at least one of which is online learning. An algorithm or teacher(s) sets individual students schedules. The Individual-Rotation model different from the other Rotation models because students do not necessarily rotate to each available station or modality.

(continued)

Model	Description
Flex	A program in which content and instruction are delivered primarily by the internet, students move on an individual customized, fluid schedule among learning modalities, and the teacher-of-record is on-site. The teacher-of-record or other adult provides face-to-face support on a flexible and adaptive as-needed basis through activities such as small-group instruction, group projects, and individual tutoring. Some implementations have substantial face-to-face support, while others have minimal support. For example, some flex models may have a face-to-face certified teacher who supplements the online learning on a daily basis, whereas others may provide little face-to-face enrichment. Still others may have different staffing combinations. These variations are useful modifiers to describe a particular Flex model.
Self-Blend	Describes a scenario in which students choose to take one or more courses entirely online to supplement their traditional courses and the teacher-of-record is the online teacher. Students may take the online courses either on the brick-and-mortar campus or off-site. This differs from full-time online learning and the Enriched-Virtual model (see the next definition) because it is not a whole-school experience. Students self-blend some individual online courses and take other courses at a brick-and-mortar campus with face-to-face teachers.
Enriched-Virtual	A whole-school experience in which within each course (e.g., math), students divide their time between attending a brick-and-mortar campus and learning remotely using online delivery of content and instruction. Many Enriched-Virtual programs began as full-time online school and then developed blended programs to provide students with brick-and-mortar school experiences. The Enriched-Virtual model differs from the Flipped Classroom because in Enriched-Virtual programs, students seldom attend the brick-and-mortar campus every weekday. It differs from the Self-Blend model because it is a whole-school experience, not a course-by-course model.

(Staker & Horn, 2012)

Blended learning was used in university and work place settings several years before implementation in the K-12 setting (Allen et al., 2007). Noting the same existence of research at the university level and lacking research at the K-12 level, Kazu and Demirkol (2014) completed an experimental study with 54 twelfth-grade students in Diyarbakir Anatolian High School in Turkey. There was a similar mixture of girls and boys in the group of 27 students in each experimental and control group. The experimental group participated in a blended learning environment, and the control group participated in a traditional learning environment in a biology class. On statistical tests

performed on the overall tenth- and eleventh-grade achievement by the groups, there was no statistically significant difference found in the two groups' academic achievement. There was also no statistically significant difference found in the eleventh-grade biology scores of the groups. The researcher determined the groups were objectively assigned. Each group took a pretest of 25 multiple-choice items. A posttest of 21 multiple-choice items was given to both groups. The experimental group participated in a blended learning Flipped Classroom application. A significant statistical difference was found in the comparison of pre and posttest scores for each group with both the experimental and control group showing success. Moreover, the experimental group showed a positive statistically significant difference over the control group in the posttest for academic achievement.

Similar experimental research studies have been completed at the high school level examining the impact and effect of blended learning in geography classes and biology classes. Korkmaz and Karakus (2009) found that "Blended learning model contributes more to student attitudes towards geography course when compared to the traditional learning model" (p. 60). In Korkmaz and Karakus's 58 student research study, the research also revealed, "the blended learning model contributes more to critical thinking dispositions and levels of students . . . particularly at the sub-dimensions of open-mindedness and truth-seeking . . . emphasized that open-mindedness refers to tolerance to divergent views and self-monitoring for possible errors" (p. 60).

In a study on high school students' biology achievement and their attitudes toward the use of the internet, 107 students participated in the study and results indicated "blended learning model contributed more to the students' biology achievement than

traditional teaching methods did and that the students' attitudes towards the Internet developed statistically significantly" (Yapici & Akbayin, 2014, p. 235). The study also found that using the blended learning model, students being prepared more before coming to class, enjoying working at their own pace, and using the opportunity to revise their work at any time increased subject matter understanding (Yapici & Akbayin, 2014).

21st Century Student Outcomes of Initiative and Self-Directions

Management of goals and time. In preparation for the future, the United States and many countries around the world place a major focus on educational systems to prepare students for success. It is truly a future that is unknown and uncertain; therefore, preparation must be different from the past (Johnson, 2009; Law, Lee, & Chow, 2002; Partnership for 21st Century Learning, 2015; Tapscott, 2009). The learning continuum described by the Partnership for 21st Century Learning (2015) has been previously cited as being the most comprehensive of all 21st century learner descriptions found by this researcher.

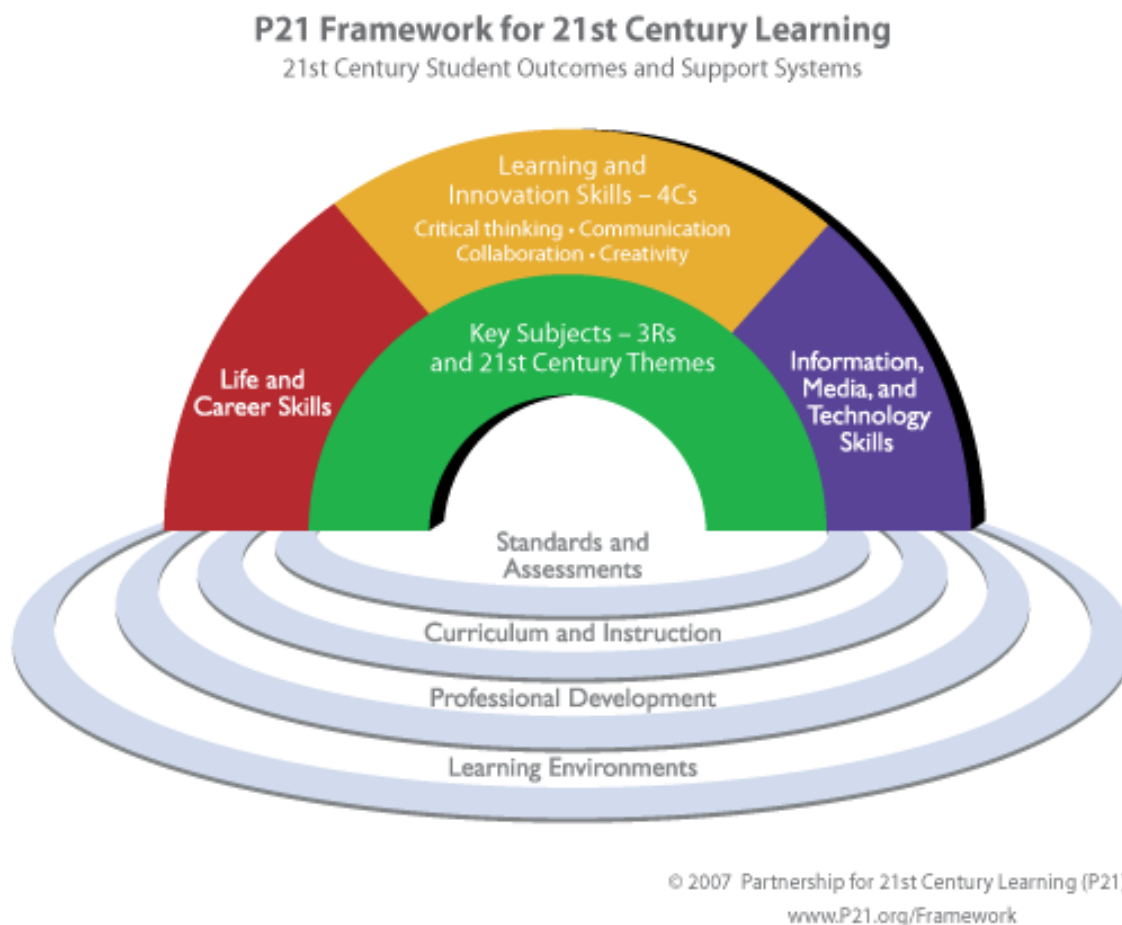


Figure 1. P21 Framework for 21st Century Learning: 21 Century Student Outcomes and Support Systems.

In the Partnership for 21st Century Learning Framework in Figure 1, the shadow casted by the rainbow, which encompasses subcategories of Standards and Assessments, Curriculum and Instruction, Professional Development, and Learning Environments represent the category of Support Systems for 21st Century Learning. The rainbow components of the Partnership for 21st Century Learning Framework represent the subcategories of Key Subjects, Life and Career Skills, Learning and Innovation Skills and Information, Media, and Technology Skills represent the category of 21st Century Student Outcomes. “This Framework describes the skills, knowledge and expertise

students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise and literacies” (Partnership for 21st Century Learning, 2015, p. 1).

The subcategories which represent the 21st Century Student Outcomes portion of this Framework are comprised of skillsets. Examples from the subcategory of life and career skills include the skillsets of flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility (Partnership for 21st Century Learning, 2015). Other researchers have described these subcategories and skillsets as sets of hard skills, which are “technical and academic skills . . . that are easy to define, measure and observe” (Sharma & Sharma, 2010, p. 41) and soft skills, which are “wide-ranging personal and interpersonal skills . . . difficult to measure as they are intangible” (Sharma & Sharma, 2010, p. 41). Kyllonen (2013) described many of these subcategories and skillsets as “cognitive skills,” those assessed by standardized assessment and “non-cognitive skills” or “personality factors,” which include “academic goals, institutional commitment, social support and involvement, academic self-efficacy and self-concept, conscientiousness, a tendency to procrastinate, a need for cognition, grade goals, time management skills, and persistence/effort regulation” (pp. 17-18). Hall and Farkas (2011) described these skills as “hard” or “cognitive skills . . . measured by test scores” and “soft” or “attitudinal/behavioral traits . . . including aspirations, self-confidence and work habits” (p. 1261) which are not measurable by test scores. Both sets of skills are determining factors in life and in workplace success including the job promotions that will be available and wages that will be earned (Hall & Farkas, 2011).

In their study, Harris and Rogers (2008) derived their working definition of soft skills or “affective domain attributes” from researchers Bancino and Zevalkink (2007), Coll and Zegwaard (2006), Hmelo-Silver, Duncan, and Chinn (2006), Lewis (2007), Lorenz (2007) and Lucci (2005). Harris and Rogers identified the soft skills needed in technical education for high school students as the set including work ethic, positive attitude, social grace, facility with language, friendliness, integrity, and the willingness to learn. Their research asserted, “Soft skills typically complement a student’s hard or technical skills” (Harris & Rogers, 2008, p. 19). Results of the study indicated the soft skills or affective domain attributes most desired by professors in engineering and technical education at the university level are included in the noted K-12 national educational standards for career and technical education. Those soft skills or attributes most desired, work ethic and a high level of organizational skills, had a mean score at or above the median in quantitative, statistical test results (Harris & Rogers, 2008).

Soft skills such as “communication and interpersonal skills, emotional intelligence, leadership qualities, team skills, negotiation skills, time and stress management and business etiquettes” can provide a “competitive advantage” in terms of a career (Deepa & Manisha, 2013, p. 7). Deepa and Manisha’s (2013) study of recruiter perspectives indicates 86% of the 100 respondents specified that soft skills are very important to success in the workplace. Although technical skills, know-how, and proficiency are very important, technology becomes outdated and obsolete. The soft skills enabling one to adapt, seeking continuous improvement, and motivation to learn new skills are what enable long-term success in an organization.

From Partnership for 21st Century Learning (2015), the skillset of initiative and

self-direction, which is under the life and career skills subcategory, list objectives for students to management goals and time, working independently, and be a self-directed learner as needed outcomes. As demonstrated in the research, these objectives are embedded in the soft skills and other attributing descriptions that are desired and necessary for success in the educational realm, the world of work, and for general success in life. Specific research on the individual components of management of goals and time, working independently, and being a self-directed learner resulted in very few peer reviewed research documents and even fewer pertaining to the secondary educational level.

To gain insight into a high school student's use of time during the school year, an examination of a research study, which utilized data from the American Time Use Survey of high school students age 15 through 19, had these findings. In 2003 through 2007, students slept for 8.1 hours per day and performed educational activities including class time and homework for 7.5 hours per day on non-holiday school days. Leisure and sports activities, which included watching television, socializing, and computer/games, accounted for 4.0 hours on average per day for this time period. Travel time, grooming, and eating accounted for 2.7 hours a day while working, volunteering, and completing household chores accounted for 1.7 hours a day (Allard, 2008).

Akcoltekin (2015) studied 270 twelfth-grade students. The following findings came from the 127 males and 143 females who participated in the study. The study found a negative relationship between time management and research anxiety in a negative direction. As time management among the participants increased, the research anxiety decreased. Conversely, time attitudes, a subscale of time management in this

study, was found to have a similar negative correlation with research anxiety. As a result, “as their anxiety level increases, their ability to control time fades and becomes more difficult” (Akcoltekin, 2015, p. 2247). Student must be given opportunities to practice and utilize these concepts in a controlled environment in order to improve (Akcoltekin, 2015; Tsai & Liu, 2015). Akcoltekin emphasized that time management must be taught as early as the elementary and middle school levels of education through high school. In a study of junior high school students examining the relationship between time management skills, interpersonal skills, and academic achievement, this conclusion was drawn: “Time management involves setting goals and allocating adequate time for activities” (Tsai & Liu, 2015, p. 512). Deepa and Manisha (2013) referred to time management as another of the soft or noncognitive skills that are necessary for school and workplace success and cannot be evaluated by standardized tests.

Environmental influences such as parents, teachers, peers, and the classroom all have a major impact on the goal orientation and mastery of these goals in adolescents. Student perceptions of their learning environment have shown to have a positive correlation with success and nonsuccess (Caraway, Tucker, Reinke, & Hall, 2003; Eryilmaz, 2011). This supports SDT’s assertion that relatedness, as one of the three basic psychological needs to enhance well-being, is an important aspect of improving overall personal development. Along the same vein, Kim (2015) conducted a study in a public southern California high school with 331 participants. The school was chosen because of the diverse ethnic makeup, high attendance rate of 95%, and low dropout rate of less than 1%. Thirty percent of the school’s population was on free or reduced lunch, and 5% of the population were English language learners. The ethnic makeup of the sample

population was 100 students of Latino descent, 92 students of Asian descent, 81 students of European descent, 24 students of Middle Eastern Descent, 15 students of African descent, 17 students of other origins, and two students did not specify. Kim's purpose was to investigate the "perceptions of their parents' or classroom's motivating factors and their achievement motivation in their math class, connecting achievement goal orientation and self-determination theories" (p. 411). The research concluded that when students perceive teachers have a focus on improving the student's competency, there is an improvement in predicting their goal orientation (Kim, 2015).

Self-directed learner and working independently. Research has found that using problem-solving strategies in a learning environment can promote and strengthen creative thinking and critical thinking skills which support 21st Century Learning objectives such as self-directed learning (Alismail & McGuire, 2015). According to the Partnership for 21st Century Learning (2015), self-directed learners would exhibit the following characteristics:

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress (p. 6).

The majority of the research completed pertaining to self-directed learning centers around higher education and adult learners (Boyer, Edmondson, Artis, & Fleming, 2014; Douglass & Morris, 2014; Garrison, 1997; Khiat, 2015; Song & Hill, 2007). In defining self-directed learners, Patterson, Crooks, and Lunyk-Child (2002) specified the following

six competencies as requirements for the distinction in the field of nursing: “assessment of learning gaps, evaluation of self and others, reflection, information management, critical thinking, and critical appraisal” (p. 26). In the field of medicine, information, processes, procedures, and techniques change quickly. Doctors must continuously learn and utilize the latest techniques, so professional development opportunities used in other professions will not suffice. Doctors must be reflective in their practice with previous experiences and present situations in order to provide the best care for patients (Towle & Cottrell, 1996).

In a university study with juniors and seniors, Dynan, Cate, and Rhee (2008) described self-directed learning as one of the two main goals of teaching that would serve students far beyond the classroom as “lifelong learners” (p. 96). Dynan et al., like other researches such as Boyer et al. (2014), Garrison (1997), Towle and Cottrell (1996), and Lee, Tsai, Chait, and Kout (2014), identified Malcolm Knowles as one of the initial researchers in the field of adult learning and a pioneer researcher in the area of self-directed learning. Each of these researchers used Knowles’s (1975) book to serve as or to develop their definition of self-directed learning. As quoted by Patterson et al. (2002), Towle and Cottrell (1996) and Dynan et al. from Knowles, self-directed learning

is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. (p. 18)

Similar to the research for management of time and goals, the defining elements of self-directed learning, also a noncognitive or soft skill, are overlapping with the elements

of working independently described by Partnership for 21st Century Learning (2015).

Working Independently is characterized by “Monitor, define, prioritize and complete tasks without direct oversight” (Partnership for 21st Century Learning, 2015, p. 6). The tasks refer to work which would be learning or academic endeavors in an educational setting or more tangible endeavors in a business or industry setting.

In their 4-year study of Bachelor of Science students in a nursing program, Patterson et al. (2002) found those who mastered the six competences of self-directed learning as students were successful as students and practitioners in the field. In another medical-oriented study, Towle and Cottrell (1996) concluded, “The ability to acquire skills in self-directed learning may be the key link between undergraduate education, postgraduate training, and continuing professional development” (p. 359). The authors also reported that reflective and critical thinking skills are most important in developing self-directed learning skills.

In other adult learning research, survey responses from Khiat’s (2015) research study of 1,291 students at SIM University in Singapore cited the importance of assisting learners in identification of their own learning needs as an important step in the process of establishing self-directed learning. Likewise, Boyer et al. (2014) presented conclusions from their meta-analysis of 30 years of research on self-directed learning. The results indicated there are some preliminary attributes that must be present “to increase students’ willingness to use SDL” (Boyer et al., 2014, p. 28). These attributes are “internal locus of control, motivation, support, and self-efficacy” (Boyer et al., 2014, p. 28). It is noted that “the meta-analysis does not infer causality,” but “student comments provide validation for the findings of the meta-analytic review and provides credibility” when “students noted

that the SDL projects improved their confidence and ability and SDL projects require students to take control of their learning” (Boyer et al., 2014, p. 28).

“Taking responsibility to construct personal meaning is the essence of self-directed learning” (Garrison, 1997, p. 30). The author further stated self-directed learning is not done in seclusion and must be supported through conditions and resources conducive to learner needs. Additionally, the author stated the quality of learning for short term and long term have great potential with the infusion of self-directed learning skills. There are areas such as critical thinking, learner interests, and motivation that require additional research to further validate their impact on self-directed learning.

Douglass and Morris (2014) conducted a focus group study with 80 underclassmen from the areas of Human Science and Business and Health from a mid-western university. Results were correlated from eight focus groups of eight to 12 participants answering six open focus-group questions. The study’s findings produced three primary themes and a correlation to those themes in the research. The study cited that “Student-Controlled, Faculty-Controlled, and Administration-Controlled are Facilitators and Barriers to self-directed learning” (Douglass & Morris, 2014, p. 21). From the student-controlled factor, the results indicated that being preemptive in class, being preemptive with other students, and being preemptive outside of class as well as being attentive to their own learning routines increased student learning success. “Students stated that a great deal of the responsibility for self-directed learning lay at their feet” (Douglass & Morris, 2014, p. 21). However, the researchers reported, based on the student responses,

the environment which promotes self-directed learning (or not) is largely the product of the actions of faculty and administration . . . dimensions in this process,

including class structure, curriculum design, and professorial attitudes and traits. Although these were external factors, they did have an impact on student's motivation to study and succeed. (Douglass & Morris, 2014, p. 21)

In Dynan et al.'s (2008) study of 250 university participants on learning structure and readiness for self-directed learning, the researchers investigated whether structured, described as patterning after their professor's skills, or unstructured, described as practicing their own self-directed skills, would impact readiness to engage in self-directed learning. Realizing other factors may also influence lifelong learning, Dynan et al. hypothesized that by answering the question surrounding whether structured skills or unstructured skills had the greatest impact on students, they "will enhance the ability of educators to produce graduates capable of lifelong learning" (p. 96). Their conclusion found structure as well as course design enhanced student readiness for self-directed learning. "The structured environment provides a more suitable one for improving readiness for SDL for more students" (Dynan et al., 2008, p. 99). Finally, Dynan et al. concluded, "Ultimately, the skill of self-direction in learning is one that is essential for students and workers to remain lifelong learners" (p. 100).

In much of the self-directed learning research, the focus is on university and adult learners (Boyer et al., 2014; Douglass & Morris, 2014; Garrison, 1997; Khiat, 2015; Song & Hill, 2007). The Northwest Regional Educational Laboratory published an article by Connor (2004) which provided the only specific and concise definitions and examinations of traits for the self-directed learner in the K-12 educational setting this researcher could locate. Connor defined being a self-directed learning as a "disposition or trait" (p. 1) developed by students and not a list of "observable behaviors" (p. 1) a student displays.

The traits described by Connor are also specified in the research findings of other researchers on the topic of self-directed learning as a contributor to, a basis of, or a determining factor for the successful attainment of self-direction in learners. Connor's traits included Student Motivation also specified by Garrison (1997), Eng (2015) and Lee et al. (2014). Connor identified the trait of Goal Orientation also specified by Khiat (2015) and Douglass and Morris (2014). The trait of Self-Efficacy was identified by Connor and specified by Boyer et al. (2014) and Song and Hill (2007). Locus of control recognized by the author was also specified by Boyer et al. and Gibbons et al. (1980). Metacognition is another trait Connor stated also specified by Garrison and Lee et al. As well, Connor recognized Self-Regulation also specified by Khiat, Garrison, and Lee et al. Connor insisted these six student traits alone are not enough to ensure that a student can become a self-directed learner. Within the learning environment, the school community must develop an atmosphere that fosters student choice and student responsibility while students engage in activities that are collaborative, project-based, and provide occasional "rewards for achievement, perseverance, risk taking, and collaboration" (Connor, 2004, p. 4).

Strom, Strom, Wing, and Beckert (2009) conducted a study of 956 adolescents examining how schools can improve student engagement. The researchers found students made requests for opportunities to improve their internet skills that would in turn strengthen their academic achievement. "In the past, teachers were the main source of learning . . . because the Internet is now the major source of information, students believe teachers should spend more time preparing assignments to facilitate self-directed learning online" (Strom et al., 2009, p. 118). The study's findings documented that "Teenagers are

puzzled by the fact that teachers seldom employ the Internet to motivate them or improve their capability for self-direction” (Strom et al., 2009, p. 112). The researchers concluded that students no longer have a passive role in their education and “adults can no longer give students an education” (Strom et al., 2009, p. 120). Student voices must be heard and their needs, opinions, and insights must be taken into consideration as the learning environment and learning experiences are being reformed (Strom et al., 2009).

SDT Attributes

SDT is a theoretical approach to describing human motivation and personality (Ryan & Deci, 2000a). The basis of SDT is constructed on successfully fulfilling three basic psychological needs of autonomy, competency, and relatedness (Deci & Ryan, 2002; Deci et al., 1991; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Ryan & Deci, 2000a). These three attributes are “essential for facilitating optimal functioning of the natural propensities for growth and integration, as well as for constructive social development and personal well-being” (Ryan & Deci, 2000a, p. 68).

Motivation: Intrinsic and extrinsic. Motivation is a widely studied area in human psychology with the focus to ascertain its characteristics, origins, and impact on individuals and groups. An unmotivated person is described as one who is not moved or inspired to do something, whereas a motivated person is eager and directed to complete a task (Ryan & Deci, 2000b). Intrinsic motivation and extrinsic motivation have been described as having opposing characteristics, origins, and impacts on human behavior (Dysvik & Kuvaas, 2012; Gagne & Deci, 2005; Mirabela-Constanta & Maria-Modela, 2011; Ryan & Deci, 2000b). Ryan and Deci (2000b) defined intrinsic motivation as “doing something because it is inherently interesting or enjoyable” (p. 55) and extrinsic

motivation as involving “doing something because it leads to a separable outcome” (p. 55). Separable outcomes would include things such as tangible awards, recognition, gaining approval, or avoiding negative consequences for behaviors or performance (Dysvik & Kuvaas, 2012; Gagne & Deci, 2005). Cooper (2012) defined intrinsic as being “authentic or congruent motivation and goals” and extrinsic as being “incongruent with a person’s authentic needs and experiences” (p. 154).

As the focal component of self-determination, Ryan and Deci (2000a) expanded motivation to be described on a continuum. The continuum is defined on a basis from amotivation, which has characteristics of being “impersonal,” “nonvaluing,” “nonintentional,” and “lack of control,” where behaviors are described as being “nonself-determined” (Ryan & Deci, 2000a, p. 72). The contrasting side of the continuum is defined as being “intrinsic motivation,” which has characteristics of being “internal,” “interest,” “enjoyment” and “satisfaction,” where behaviors are described “self-determined” (Ryan & Deci, 2000a, p. 72).

On this continuum, between the two extremes of amotivation and intrinsic motivation, are the extrinsic motivation factors as displayed in Figure 2 from Ryan and Deci (2000b, p. 61). Unlike the classical fixed definition of extrinsic motivation, within the continuum, extrinsic motivation is broken into four regulations. These regulations from close to amotivation moving towards intrinsic motivation are “external regulated,” “introjected regulated,” “identified regulated,” and “integrated regulated” forces that impact human behavior (Ryan & Deci, 2000a, pp. 72-73).

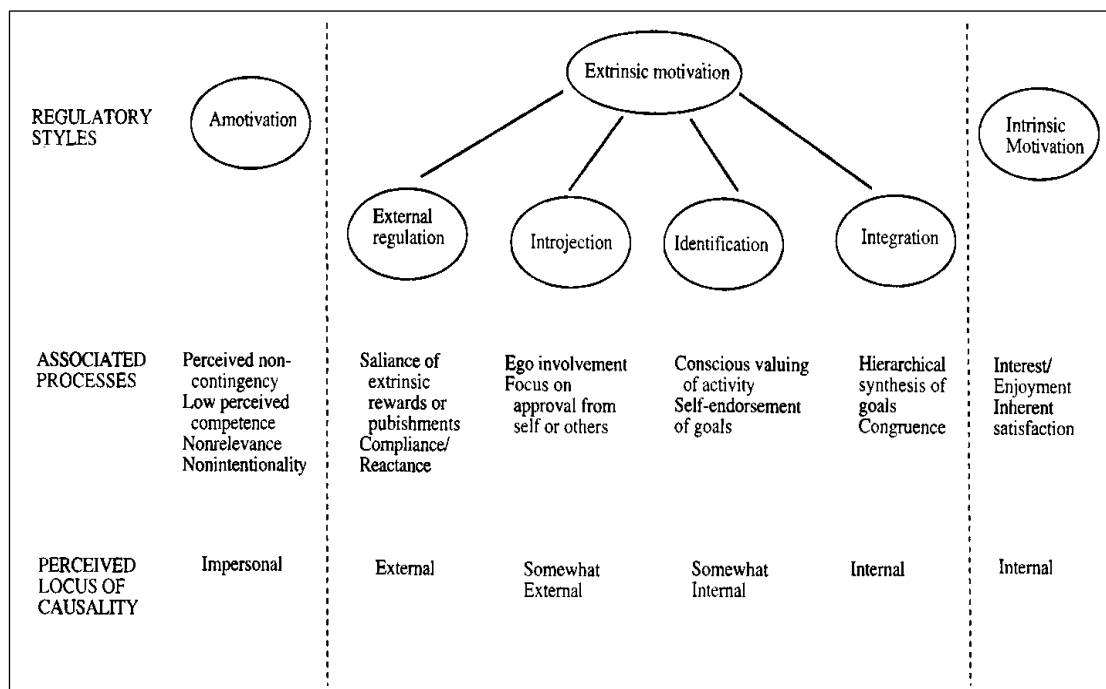


Figure 2. Intrinsic and Extrinsic Motivations.

Deci, Ryan, and Williams (1996) and Ryan and Deci (2000a) identified external regulation, introjection regulation, identification regulation, and integration regulation as the four regulatory factors of extrinsic motivation. External regulations are characterized by compliance to parents or authority to avoid punishment or to gain some tangible reward for a particular behavior or action. The author provided the following example for external regulation: “The biology student who absorbed little as she sat in front of her textbook because her parents made her was externally regulated” (Deci et al., 1996, p. 168).

Introjected regulations are characterized by imposing guilt and self-esteem related contingencies onto a person. The characteristics are internal to self, and the characteristics are very controlled by the shame of letting someone down. There is no

sense of gaining personal satisfaction for accomplishing the task. The author's example for introjected regulations is, "The girl who studied biology because 'she felt like she had to' was regulated by introjects, so her behavior would be classified as controlled" (Deci et al., 1996, p. 169).

With identified regulations, it is a more autonomous and self-determined form of extrinsic motivation than the prior two forms because there is understanding for the worth and individual significance of the action or behavior. The author's example is, "The girl who willingly studied for her biology exam because doing well on the exam was important for her becoming a veterinarian had identified with the regulation of that activity" (Deci et al., 1996, p. 169).

The final factor on the continuum of extrinsic motivation is integrated regulations and is characterized as the most autonomous of all the factors. "Integration occurs when identified regulations are fully assimilated to the self, which means they have been evaluated and brought into congruence with one's other values and needs" (Ryan & Deci, 2000a, p. 73). The authors cited it this way, "If the aspiring veterinarian who identified with learning biology had fully integrated that identification with other aspects of her self, she would have displayed integrated regulation of her studying" (Deci et al., 1996, p. 169).

Amotivation and the regulatory factors closest to it on the continuum are also described as being less autonomous and more controlled. The closer the regulated factors get to intrinsic motivation, in the extrinsic motivation factors, the more these extrinsic factors become internalized and integrated into a person's internal needs which are the characteristics of congruence with self and factors of personal interest and satisfaction

(Deci & Ryan, 2002; Ryan & Deci, 2000a). “Extrinsically motivated behaviors become self-determined through the closely related developmental processes of internalization and integration” (Deci et al., 1996, p. 167). Furthermore, “factors which enhance the experience of autonomy facilitate intrinsic motivation and promote internalization, whereas those that leave people feeling controlled diminish both intrinsic motivation and internalization” (Deci et al., 1996, p. 168).

Reeve (2002) contended that autonomous or intrinsic motivation benefits students in the educational setting. There are supportive measures that can be implemented in the classroom to enhance student autonomy. From a three-part study conducted by Reeve, Bolt, and Cai (1999), several autonomy-supportive behaviors were identified. The three studies included a validity study on the Problems in Schools questionnaire which was used in the subsequent studies, a study of preservice teacher ratings on a mini-lesson using the questionnaire, and a study on K-12 teachers self-reporting on their attempts to motivate students. The K-12 study included the How I Teach and Motivate a Disengaged Student questionnaire and “a survey to assess the control variables” (Reeve et al., 1999, p. 544). The general findings of this study indicated teacher behaviors that were more autonomy-supportive included time spent listening, providing time for independent work, commendations on work performance, and inquiring about students wants.

Van Nurland, Dusseldrop, Martens, and Boekaerks (2010) determined in their study of Dutch high school students that intrinsic motivation is important but is not the only determining factor for student success. The authors asserted that students must also be able to adjust and govern their assignment activities. Similarly, Saeed and Zyngiel (2012) concluded in their qualitative study that motivation is an essential component of

the multifaceted process of engagement. “Motivation guides learners’ interest into important learning activities” (Saeed & Zyngiel, 2012, p. 261). Saeed and Zyngiel also acknowledged “in situations where intrinsic motivation is not working then teachers should consider using extrinsic motivation to boost the intrinsic motivation of their students” (p. 262). Likewise, Koestner, Otis, Powers, Pelletier, and Gagnon, (2008) concluded in their survey study of 330 high school students on academic and leisure goals “that only autonomous motivation, not controlled motivation, was related to goal progress” (p. 1210).

Basic needs: Autonomy, competency and relatedness. Research has shown that motivation is an essential part of SDT. Many researchers have investigated the impact of extrinsic motivation, intrinsic motivation, and autonomous motivations on human behavior. Ryan and Deci (2000a and 2000b) have identified three basic needs of autonomy, competency, and relatedness as the positive process that supports self-motivation and well-being in SDT. Within SDT, autonomy is the opportunity to self-regulate and make choices. Likewise, competency is satisfaction in performance and outcomes, whereas relatedness is a satisfactory connection with others in a social setting (Deci et al., 1991). “Simply stated, motivation, performance and development will be maximized within social context that provide people the opportunity to satisfy their basic psychological needs for competence, relatedness and autonomy” (Deci et al., 1991, p. 328).

Hafen et al. (2012) conducted a research study to determine “the extent to which high school students’ perceptions about academic competence, teacher connection, and autonomy are associated with student reported and observed engagement across the

school year” (p. 247). Data were collected via pre and post surveys in this multiple measure, longitudinal study of 34 teachers and 578 students from four Virginia schools. Conclusions were surprising to Hafen et al. in that their findings did not support two of SDT needs of connection or relatedness and competency in predicting changes in engagement across the school year. Conclusions from this study for the area of autonomy were conclusive for

students who reported having greater autonomy early in a course had increases in student engagement throughout the year, while classrooms without autonomy exhibited the all-to-common declines in student engagement. This novel finding is not surprising, although it provides an important contribution to adolescent research, as it strengthens the existing argument that adolescents are particularly prone to seek and flourish in environments that offer autonomous interactions. Unfortunately, autonomy is also a key element that is missing from most high school classrooms. (Hafen et al., 2012, p. 247)

In a meta-analysis of SDT research, Niemiec and Ryan (2009) concluded, “intrinsic motivation and autonomous types of extrinsic motivation relate positively to important academic outcomes” (p. 141). Their research identified strategies within the classroom that enhanced all three basic needs. Autonomy is enhanced by “providing choice and meaningful rationales for learning activities, acknowledging students’ feelings about those topics, and minimizing pressure and control” (Niemiec & Ryan, 2009, p. 141). Competency is enhanced by “providing effectance-relevant, as opposed to norm-based evaluative, feedback and optimally challenging tasks” (Niemiec & Ryan, 2009, p. 141). Relatedness is enhanced by “conveying warmth, caring, and respect to students”

(Niemiec & Ryan, 2009, p. 141).

Reis et al.'s (2000) study with 67 university psychology students completed daily diary logs where the researchers collected qualitative data to determine if satisfaction in terms of autonomy, competency, and relatedness have an impact on daily well-being. Data from pre and post study questionnaire were also collected providing additional information for quantitative measures. The results from this study reaffirmed results found in a prior study which also concluded competency and autonomy positively impact well-being. As well, this study confirmed relatedness having a positive impact on well-being also.

“all three needs were significantly associated with well-being. Higher levels of autonomy and competence were associated with more favorable outcomes on all four measures of well-being. . . . Interestingly, relatedness was significantly predictive only of the two positive outcomes, positive affect and vitality, and not the two negative outcomes, negative affect and symptoms. (Reis et al., 2000, p. 429)

Minnaert, Boekaerts, and De Brandander's (2007) study of 114 vocational education, high school students in a project-based learning course focused on economy or business administration produced results with respect to the three basic needs and interests. The researchers' results indicated autonomy and competency fluctuate in different stages of project implementation. As well, “vocational students' interest in a group project, which lasts a long time, is largely based on their perception of social relatedness in the group” (Minnaert et al., 2007, p. 584). The study also confirmed there was no significant difference associated with students who completed the questionnaires

using paper-pencil and those completing the questionnaires using computer-based means. The author affirmed these findings by stating, “The significance of this study for on-line measurement of interest seems promising” (Niemiec & Ryan, 2009, p. 584).

Chen, Jang, and Branch (2010), Rienties et al. (2012) and Hartnett (2015) acknowledged a great deal of research has been conducted with respect to SDT’s three basic needs, but very little has been conducted examining how these principles coincide with the quickly expanding areas of e-learning. Rienties et al. and Hartnett also acknowledged that very few researchers have examined the impact of autonomy, competency, and relatedness in the e-learning settings. Chen et al. concluded that perceived autonomy by students was the greatest predictor of intrinsic motivation and autonomous extrinsic motivation in their study of 267 university students in two online special education teacher preparation courses. Perceived ability or competence was the greatest predictor of amotivation in students. The next best predictor of intrinsic motivation, autonomous extrinsic motivation factors, and amotivation is perceived affiliation or relatedness.

Chen and Jang (2010) analyzed the same data in an earlier study and concluded that “the direct effect of contextual support on learning outcome was negative” (p. 750). This conclusion was very minimal in the negative direction, but it emphasized the support structures were found to have no impact or a slightly negative impact on the learner outcomes. However, the results of both studies supported the findings for intrinsic motivation and extrinsic motivation factors in relation to the three basic needs. “It is through the enhancement of students’ perceptions of autonomy, relatedness, and competency that makes contextual support effective and meaningful to online students”

(Chen & Jang, 2010, p. 750). Chen et al. (2010) concluded that for online learners perceived autonomy is the best predictor of student engagement. Perceived ability was determined to be the best predictor of learning and achievement, as well as the greatest predictor of course satisfaction was perceived affiliation.

Hartnett (2015) took a different approach in presenting conclusions for her study which used data from a case study doctoral dissertation which “was exploratory in nature and sought to identify, explore and understand pre-service teachers’ online learning experiences as they related to their motivation to learn in a specific online context” (p. 88). From an SDT perspective with the focus of autonomy, competence, and relatedness, Hartnett identified constraints that undermine motivation for online learners. The constraints included “high workload, a focus on assessment, perceptions of lack of relevance, and unclear and complicated assignment guidelines” (Hartnett, 2015, p. 97). Chen et al. (2010) noted similar findings but noted them as amotivational factors and suggested that instructors build into classes orientations, consultation, community building opportunities, and face-to-face options. Chen and Jang (2010) noted similar amotivational factors and made suggestions to reduce these effects such as more flexible learning and assessment options, collaboration with peers, and assisting students with identifying learning strategies.

Summary

The research in this literature review has shown the pervasive nature of the impact of technology in the field of education. From learning environments with exclusively online delivery systems to the expansion of multiple forms of blended learning initiatives in K-12 and university settings, based on the research presented, technology has made the

chalkboard and the teachers as the leading source of information obsolete in the 21st century educational setting.

The four major areas of focus in this literature review include characteristics of current 21st century learners, components of blended learning environment in secondary schools, 21st century learning outcomes, and SDT attributes. Several corresponding themes emerged from each of these areas. In the 21st Century Student Outcomes, the areas of goal and time management, self-directed learners, and working independently were found to mirror attributes found in noncognitive skills or soft skills. In addition, the traits of self-directed learners are also traits found in those who are autonomously motivated in their pursuits. The research indicates e-learning provides opportunities for participants to make choices, but blended learning in particular provides choice in time, location, and a delivery system. Much of the research supports blended learning, and the 21st Century Student Outcomes have been connected with increased motivation and performance.

There are gaps in the research for each of the major areas of this study as it pertains to the K-12 educational setting. Educational practitioners in K-12 learning environments must take advantage of the opportunities technological advances provide. Research must be conducted to guide practitioners in the right direction to offer students the greatest educational prospects. This study aimed to add to the body of knowledge for high school students in a blended learning environment with respect to their self-determination and 21st Century Student Outcomes.

Chapter 3: Methodology

Very few initiatives have impacted education at every level as pervasively and with such speed and intensity as the introduction of computer-based instruction into classrooms (Kelly, McCain, & Jukes, 2009). Colleges and universities took the lead in the late 1980s to utilize computer-based instruction as a viable instructional option with their need to increase academic opportunities to reach an increasingly mobile society while cutting costs (Harper et al., 2004). Instruction provided exclusively by computer or online methods has transitioned to hybrid or blended models in many different forms. Blended learning, as it is most widely recognized, provides the best of online instruction without the limits of time, place, path, and/or pace, with the face-to-face opportunities of a traditional educational environment (Staker & Horn, 2014). Initially, the K-12 educational sector lagged behind in both implementation and supporting research for effective use of computer-based instruction. In the last decade, a tremendous increase in implementation of computer-based instructional options has been noted in the K-12 setting (Watson et al., 2011). However, the research for effective methods, effective environments, and the impact on students in computer-based courses still lags behind the research done at the university level and that done for corporate training (Kazu & Demirkol, 2014; Lemley et al., 2014; O'Dwyer et al., 2007).

In an effort to provide additional insight for K-12 educators, the purpose of this study was to examine the self-determination of high school students in a blended learning environment and meeting 21st century student outcomes. SDT identifies three basic needs of autonomy, relatedness, and competence as the positive process that fosters self-motivation and personality integration (Deci & Ryan, 2008; Ryan & Deci, 2000a). The

set of 21st Century Skills focused on for this study relate to Life and Career Skills and more specifically the subskills of Initiative and Self-Direction (Partnership for 21st Century Learning, 2015). Based on research by Deepa and Manisha (2013) and Harris and Rogers (2008), these two concepts of SDT and 21st Century Skills have been found to possess various overlapping traits.

Research Questions and Hypotheses

In order to investigate high school students' self-determination in a blended learning environment, the differences between the blended learning environment and the traditional learning environment were examined with respect to SDT. Additionally, 21st Century Student Outcomes were examined for the blended learning environment. The following research questions were used in the investigation.

1. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to autonomy?
2. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to competence?
3. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to relatedness?
4. Does the blended environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Goal and Time Management?

5. Does the blended environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Working Independently and Self-Directed Learning?

The fourth and fifth research questions used quantitative and qualitative questions in the survey instrument. Creswell (2003) referred to the use of both quantitative and qualitative questions in a survey as a form of “integration of strategies” (p. 212); “in data collection, this ‘mixing’ might involve combining open-ended questions on a survey with closed-ended questions on the survey” (p. 212). Employing both methodologies provided a greater opportunity to deliver a more complete interpretation of results (Creswell, 2003).

The following hypotheses are related to the given research questions. The null hypotheses and alternant hypotheses are placed under the corresponding research questions.

1. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to autonomy?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to autonomy.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to autonomy.

Algebraically, the hypotheses are stated as $H_0 : \mu_1 = \mu_2$ and $H_1 : \mu_1 > \mu_2$.

2. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to competence?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to competence.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to competence.

Algebraically, the hypotheses are stated as $H_0: \mu_1 = \mu_2$ and $H_1: \mu_1 > \mu_2$.

3. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to relatedness?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to relatedness.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to relatedness.

Algebraically, the hypotheses are stated as $H_0: \mu_1 = \mu_2$ and $H_1: \mu_1 > \mu_2$.

4. Does the blended learning environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Goal and

Time Management?

H_0 : For Goal and Time Management, mean score in the blended environment will be less than or equal to zero.

H_1 : For Goal and Time Management, the mean score in the blended environment will be positive.

Algebraically, the hypotheses are stated as $H_0 : \mu_1 \leq 0$ and $H_1 : \mu_1 > 0$

5. Does the blended environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Working Independently and Self-Directed Learning?

H_0 : For Working Independently and Self-Directed Learning, mean score in the blended environment will be less than or equal to zero.

H_1 : For Working Independently and Self-Directed Learning, the mean score in the blended environment will be positive.

Algebraically, the hypotheses are stated as $H_0 : \mu_1 \leq 0$ and $H_1 : \mu_1 > 0$.

Research Design

The blended learning environment in this research study, the Soar Program, aims to provide students the opportunities to advance toward credits needed for high school graduation. In the research previously examined, it expressed that additional empirical investigations are needed to obtain information to provide insight for areas such as best practices in the implementation (Kazu & Demirkol, 2014), sustainability (O'Dwyer et al., 2007), and optimal environmental settings (Lemley et al., 2014) of computer based instructional environments in K-12 education.

Students participating in the Soar Program's evening sessions, while being concurrently enrolled in their home high school during the day, volunteered to participate in this research investigation during the summer. The study's design is a mixed-method design and investigated only one sample population of students from the Soar Program. This is a single case in one state from one school district and in a particular program that implements computer-based instruction in a K-12 setting. This research approach resembles a case study design but was not confined by all of the case study attributes described by researchers such as Gall, Gall, and Borg (2003). Gall et al. described the case study as an evaluative methodology at a "local, immediate level" (p. 17) with a manageable sample which is representative of the population where generalization can be drawn from the case study to enlighten about a different case. The current study relied on quantitative analysis to investigate all five research questions, and a combination of quantitative and qualitative questions was used to further investigate Research Questions 4 and 5. The quantitative data collection utilized a five-part Likert Scale where responses were strongly disagree, disagree, no opinion, agree, and strongly agree. Two open-ended qualitative questions further examined participant responses for Research Questions 4 and 5. The qualitative data responses, which correlate with the quantitative questions, were collected within the same survey instrument by asking open-ended qualitative questions to solicit more authentic responses that are possible with free-response questions (Creswell, 2003). Creswell (2003) emphasized that the concurrent procedures of a mixed-method approach "provides a comprehensive analysis of the research problem" (p. 16).

Participants

The participants for this research study were volunteers who were available and willing to complete the survey during the summer of 2016. The participants were enrolled in one of the district's three high schools during the regular school year and participated in the Soar Program concurrently. The participants ranged from ninth through twelfth grades. Demographic information was collected from the participants for use in describing the sample population only. The researcher did not perform any statistical analyses using any demographic data as variables. The demographic information included each participant's age, grade level, gender, ethnicity, first language, self-reported grade point average for blended learning courses, self-reported overall grade point average, the number of courses previously completed in the Soar Program, self-reported overall grade point average, and if the student received special education services.

The number of participants in the research study is an important aspect of the investigation. With a case study, the case can be as small as one participant (Creswell, 2003). In a case such as the one proposed in the current investigation, a larger sample size is needed to provide appropriate representation of the population of students in the case of blended learning environments in K-12 educational settings. Because the study involved a mixed-method data collection approach, Creswell (2003) and Gall et al. (2003) stated that a smaller sample size is often used because of the qualitative data reconciliation. For the purpose of this study, the researcher targeted a minimum of 20 students for the study but was able to survey 33 students for the study.

Research Instrument

The researcher employed a mixed-method survey to collect data for this research investigation. The survey, in Appendix C, was composed of 66 questions. Fifty-two of the 66 questions are quantitative response questions using a five-part Likert scale response tool. To gather scale scores of the responses, the following descriptive scale was used: strongly disagree, disagree, no opinion, agree, strongly agree. In Appendix D, written permission was granted by the primary author. Thirty-eight of the 52 quantitative questions were adapted for use in this research study from a research study conducted by Lemley et al. (2014). Nineteen questions were used from Lemley et al.'s survey and revised to gather matched responses from the blended learning environment and the traditional learning environment. These 38 quantitative questions elicited responses for data to investigate Research Question 1 related to autonomy, Research Question 2 related to competence, and Research Question 3 related to relatedness. The remaining 14 quantitative survey questions were created by the researcher to provide scaleable responses in relation to Research Question 4 on goal and time management and Research Question 5 on working independently and being a self-directed learner.

There were five qualitative questions in the survey instrument. The five qualitative questions explored the attributes of the 21st Century Student Outcomes associated with initiative and self-direction from Partnership for 21st Century Learning (2015). The questions specifically covered goal and time management, working independently, and being a self-directed learner with initiative, commitment, and lifelong learning. Permission to administer the survey, by the participating district, was given in Appendix E.

Survey Procedure

The researcher collaborated with the director of the Soar Program and the school district's student database manager to identify students who were eligible to participate in the survey based on the criteria of this study. Each of those eligible students was contacted by letter (see Appendix F) and an attempt was made to contact each eligible student using an automated calling system as well as the researcher attempting to call each eligible student personally to provide information about the research project. The letter included a parent and student notification letter with a signature page for consent to participate (see Appendix G). The consent form must have been signed by both the student and the parent and returned to the researcher for the student to be eligible to participate in the research study.

Beginning on the third day of the Soar Program's summer session, for 6 consecutive days of the program, students who returned all necessary documentation to the researcher were gathered in a classroom with computer access for brief directions on completing the online survey. After students completed the survey, they were allowed to return to their class or exit the building if they were finished for the day. From July 8 through July 13, additional students were contacted from the eligible group of participants because the initial sample size was not large enough to provide valid statistical data. After this second effort, the sample size was concluded at 33 participants.

The Google Forms surveying tool was used to collect the survey data. Each participant was given the Uniformed Resource Locator (URL) to access the website. An anonymous log listing when each participant started and submitted the survey was kept by the researcher to correlate with the date/time stamp submitted in the Google Forms

survey responses. The survey was also rendered inaccessible through the Google Forms program by the researcher at times when the surveys were not provided to research participants. This better ensured that the survey site was not accessed at another time by unauthorized respondents. Only technical assistance with the computer or the Google Form program was afforded to the participants, and no one had any questions. Data analysis was completed using the computer program Statistical Package for the Social Sciences (SPSS).

Data Analysis Processes

All five research questions have a quantitative data component. All statistical computations were performed using the computer software program SPSS. To analyze the quantitative data collected from Research Questions 1, 2, and 3 in this research investigation, the researcher employed a paired sample t test which is also known as a dependent sample t test (Dependent Sample Test, 2016) and a correlated group t test (Morgan, Reichert, & Harrison, 2002). For these items, this analytical approach was taken because the study was comparing the same student responses in two different environments, the blended learning environment and the traditional learning environment. More specifically, to accurately examine the null hypotheses and alternant hypotheses, the dependent sample t test: 1-tailed was used because Research Questions 1, 2, and 3 are only considering a change in a single direction, positively.

Within the t -test family the dependent sample T-Test compares the mean scores of one group in different measurements. It is also called the paired t -test, because measurements from one group must be paired with measurements from the other group. The dependent sample t -test is used when the observations or cases in one

sample are linked with the cases in the other sample. This is typically the case when repeated measures are taken, or when analyzing similar units or comparable specimen. (Dependent Sample Test, 2016, “What is the Dependent Sample T-Test,” para. 2)

A mixed-methods research approach provides greater internal validity when the quantitative data analysis is supported with rich, descriptive, thematic analysis from qualitative responses (Creswell, 2003). For Research Questions 4 and 5, the researcher performed analysis to calculate the standard scores (z scores) for the mean values for the two questions. The z scores articulated the performance of the categories relative to the null hypotheses and alternant hypotheses for Research Questions 4 and 5 (Gall et al., 2003). The researcher provided a table of means and standard deviations to calculate the test statistics and critical values for both the t tests and z scores.

Although hypothesis testing is a statistical method of making decisions about data, the testing does involve making assumptions about a population’s limitations. Because of this approach with the statistical data, the researcher must take into consideration two types of errors that can occur in hypothesis testing. The possibility of incorrectly rejecting the null hypothesis when the null hypothesis is true is called a Type 1 error. The second type of error that can occur in hypothesis testing is when the researcher accepts the null hypothesis, but the null hypothesis is false. This is denoted as a Type 2 error (Hypothesis Testing, 2016).

A summary of student responses is provided for the results of the qualitative survey questions. When reporting the final results, any theme that emerged from the participant responses was infused with the corresponding quantitative data analysis to

present a more holistic representation of the data analysis with respect to groupings, variables, and thematic responses as they apply.

Internal Consistency Reliability

Reliability in research is equivalent to the consistency of the research instrument (Gall et al., 2003; Huck, 2008). Huck (2008) stated that reliability can be assessed from different viewpoints and using different procedures, but each approach aspires to answer the same basic question: “To what extent can we say the data are consistent?” (p. 76).

Huck also explained,

researchers sometimes assess the degree to which their measuring instruments possess internal consistency. When this perspective is taken, reliability is defined as consistency across the parts of a measuring instrument, with the “parts” being individual questions or subsets of questions. To the extent that these parts “hang together” and measure the same thing, the full instrument is said to possess high internal consistency reliability. (p. 78)

To report the reliability for this research investigation, the researcher chose to employ Cronbach’s alpha coefficient which is also referred to as alpha coefficient and coefficient alpha and represented by the Greek letter α (alpha) (Morgan et al., 2002). Another way of defining the α for a study is “the chance of being wrong that you can live with” (Brown, 2016, “Significance Level,” para. 2). For this research study, $\alpha = .10$ provides an overall 90% confidence level for the study. With an overall $\alpha = .10$ and five research questions, each of the research questions is afforded an individual

$\alpha_i = \frac{\alpha}{5} = \frac{.10}{5} = .02$ for $i = 1, 2, 3, 4, \text{ and } 5$ to meet its internal consistency reliability

threshold.

Delimitations

Creswell (2003) stated that delimitations narrow the scope of the study by “focus[ing] on specific variables . . . specific participants or sites, or narrowed to one type of research design” (p. 148). The current study presented delimitation because it was conducted in the summer in one school district. The participants were a delimiting factor because they were narrowed to those who had been concurrently enrolled in the Soar Program and in one of the district’s three high school programs. The participants were also a delimiting factor because the focus was on high school students only.

Limitations

Limitations are defined as “potential weakness of a study” (Creswell, 2003, p. 148). With this consideration, the time of the school year when the survey was being administered could have caused fewer students to participate due to transportation issues, vacations, and work obligations. This could have impacted the potential sample size as well as the sample size being unpredictable. The sample size also was not dependent on the parents and students who sign and return the consent to participate form, but it was dependent on the number of students who would take time in the summer to participate. The study compared students concurrently enrolled in both learning environments; therefore, the study excluded students who were full-time in the Soar Program and students who were full-time in the traditional learning environment exclusively. In this case, a large sample size of several thousand or more students was not available, but the scope of the analysis would compare two independent samples within the validity range from each environment.

Summary

The goal of this study was to provide practitioners in the K-12 education sector with research to support implementation and sustainability efforts for blended learning environments with an emphasis on 21st Century Student Outcomes. The three basic needs of autonomy, competence, and relatedness from SDT provided a theoretical basis for the research investigation. The set of 21st Century Skills emphasized in this study related to Life and Career Skills; and more specifically, the subskills of initiative and self-direction (Partnership for 21st Century Learning, 2015) provided additional theoretical basis for this investigation. The five research questions provided a unique prospective for the study to investigate high school students' self-determination in a blended learning environment with respect to meeting 21st Century Student Outcomes. The study's format provided an appropriate research base for assessing the data responses from a quantitative and qualitative research survey. One of the assessment tools used was the dependent sample t test: 1-tailed which provided a basis to accept the null hypotheses for Research Questions 1, 2, and 3. To further examine whether the blended learning environment met the 21st Century Student Outcomes, z scores were calculated using the results from Research Questions 4 and 5 analyses. Qualitative data were presented using a summary of the responses provided by the five survey questions associated with Research Questions 4 and 5. Both the quantitative and qualitative data and responses were combined to provide a holistic view of the data analysis for the fourth and fifth research questions.

Chapter 4: Results

Introduction

Project One is like other districts' initiatives that have attempted to capitalize on the momentum created by computer-based learning environments. As stated most recently by Lemley et al. (2014), there is a gap in the research surrounding secondary students pertaining to "which learning environment best addresses the needs of 21st-century students" (p. 104). As stated earlier, there is also a lack of research on the impact of blended learning environments in the K-12 learning environment. This study investigated the self-determination of high school students in a blended learning environment to provide insight for researchers and practitioners in this area.

Deci and Ryan (2002) defined the components of SDT as autonomy, competence, and relatedness. This study investigated the opinions of current high school students defined by Berkup (2014) as Generation Z. As well, this study encompassed an investigation of the 21st Century Student Outcomes of goal and time management, working independently, and self-directed learning (Partnership for 21st Century Learning, 2015). To complete the investigation, the researcher developed five research questions which were answered using data collected from a survey with both qualitative and quantitative components. The sample population was comprised of high school students concurrently enrolled in both a blended learning environment referenced as the Soar Program as well as a traditional learning environment in any of the three high schools located in the chosen South Carolina school district.

Only results from the data analysis are presented in this chapter of the dissertation, so answering the five research questions and drawing conclusions based on

the analysis of the data presented in this chapter is reserved for Chapter 5. The results in this chapter include an overview of the participants' demographics data in Table 4 and Table 5. Table 6 is a list of the survey questions that are paired with respect to the blended learning environment and the traditional learning environment then grouped by the components of SDT. In Table 7, the mean values and standard deviations for Research Questions 1, 2, and 3 are presented according to the pairings used to compute the t -test statistics. Table 8 displays the t -test statistics for the paired samples in each learning environment and includes the number of participants (n), the mean values (M), the standard deviation (SD), the confidence interval at 98% with an $\alpha = .02$, the Critical Values (CV), the test statistics (t_{val}), the degrees of freedom (df), and the probability statistic or p value (p_{val}). Table 9 presents z score data for Research Questions 4 and 5. These data include the same data sets as Table 8 with the exception of the test statistics are z score (z_{val}) and not t_{val} like in Table 9. Table 10 provides the conversion values for the Likert scale that are need for formatting purposes for Research Questions 4 and 5. Table 11 lists the survey questions that relate to the qualitative responses for Research Questions 4 and 5. Tables 12, 13, 14, 15, and 16 provide the students' authentic responses for the qualitative portions of Research Questions 4 and 5.

Participants

The selected school district had an average daily attendance in high school of 5,218 for January 2016 in all three high schools combined (D. Broyles, personal communication, March 28, 2016). The Soar Program had a total enrollment of 247 students which included exclusively full-time students and part-time concurrently enrolled students for the school year 2015-2016 (D. Broyles and W. Wolff, personal

communication, June 12, 2016). The total population of eligible students for this study was 134 which represented the part-time concurrently enrolled students in the Soar Program. A sample population of 33 students were surveyed from the eligible population of 134. This sample population represents 24.6% of the total eligible population for this study.

Statistical Analysis

Table 4 provides the ethnicity of the sample population who completed the survey compared to ethnicity of the total population of those students who were eligible to complete the survey. The data in Table 4 shows that no demographic group is over or underrepresented in the sample population as compared to the total population.

Table 4

Ethnicity for the Sample Population Compared to the Total Population

Descriptor	Sample Population		Total Population	
	Numbers	Percent	Number	Percent
African Americans	14	42.4%	66	49.2%
Males	4	12.1%	25	18.6%
Females	10	30.3%	41	30.6%
Asian Americans				
Males	1	3.0%	1	0.7%
Females	0	0.0%	0	0.0%
Caucasians				
Male	7	21.2%	34	25.3%
Females	8	24.2%	23	17.2%
Hispanics				
Males	0	0.0%	5	3.7%
Females	1	3.0%	3	2.3%
Native Americans				
Males	1	3.0%	1	0.7%
Females	1	3.0%	1	0.7%

Table 5 displays the breakdown of the 33 survey participants by class: freshman, sophomore, junior, and senior. The numbers in the rows represent the number of students who have completed at least one course previously. From the information provided by the students in Table 5, the 33 students completing this survey have completed at least 58 courses.

Table 5

Class Information Broken Down by Number of Courses Previously Completed

Class Identifier	Number of Courses Completed				
	Zero	One	Two	Three	Four or More
Freshman	0	2	0	1	0
Sophomore	0	3	0	0	1
Junior	5	3	1	3	2
Senior	1	4	3	2	2

In order to investigate high school students' self-determination in a blended learning environment, the differences between the blended learning environment and the traditional learning environment were examined with respect to SDT.

1. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to autonomy?
2. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to competence?
3. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to relatedness?

For Research Questions 1, 2, and 3, the survey questions were paired with corresponding questions for the blended learning environment and the traditional learning

environment based on the three components of SDT of autonomy, competence, and relatedness. In Table 6, the first column description provides the learning environment and the SDT component. The next column is the survey question number and the corresponding survey questions. All of the questions within the blended autonomy section correspond with the questions in the traditional autonomy section. The scores from the Likert scale responses on the survey were paired based on each of the linked sections of autonomy—blended and traditional; competence—blended and traditional; and relatedness—blended and traditional. The statistical results were used to examine and answer Research Questions 1, 2, and 3. Tables 7 and 8 display the statistical analysis results corresponding to each learning environment and SDT component as well as the paired sample *t*-test analysis.

Table 6

Survey Questions Grouped by SDT Components and Learning Environments

Environment/ Component	Survey Question Number	Survey Question
Blended Autonomy	38	It was OK to make mistakes in this blended learning class.
	35	The online instructional system and teacher connected our learning with real life examples in my blended learning class.
	39	In my blended learning class, students were allowed to bring real life examples to the learning process.
	34	In my blended learning class, the teacher was open to suggestions about how to make class better.
	47	We had assigned seats in the blended learning class.
Traditional Autonomy	42	It was OK to make mistakes in this homebased school class.
	44	The teacher in my homebased school class connected our learning with real life examples.
	46	In my homebased school class, students were allowed to bring real life examples to the learning process.
	18	In my homebased school class, the teacher was open to suggestions about how to make class better.
	12	We had assigned seats in the homebased school class.
Blended Competence	33	I felt this blended learning class was useful to me.
	29	The online instructional system and teacher made this subject interesting to me in my blended learning class.
	32	Overall, I am satisfied with this blended learning class.
	27	I think my grade in this blended learning class reflects my effort.
	45	I think my grade in this blended learning class reflects the amount I learned.
	37	My teacher did a good job of educating me in this blended learning class.
Traditional Competence	26	I felt this homebased school class was useful to me.
	31	The teacher made this subject interesting to me in my homebased school class.
	40	Overall, I am satisfied with this homebased school class.
	36	I think my grade in this homebased school class reflects my effort.
	43	I think my grade in this homebased school class reflects the amount I learned.
	41	My teacher did a good job of educating me in this homebased school class.
Blended	19	There was a sense of concern for my well-being in Relatedness my blended learning class.
	13	I felt connected with others in my blended learning class.
	11	The teacher knew me well in my blended learning class.
	22	The teacher took a personal interest in me in my blended learning class.
	14	The teacher shared information about himself or herself with the class in my blended learning class.
	16	I felt comfortable talking with the teacher about problems that I had in class in my blended learning class.
	21	I had a good relationship with the teacher in my blended learning class.
	23	I liked being in the classroom with the teacher in my blended learning class.

(continued)

Environment/ Component	Survey Question Number	Survey Question
Traditional Relatedness	10	There was a sense of concern for my well-being in at my homebased school class.
	24	I felt connected with others in my homebased school class.
	28	The teacher knew me well in my homebased school class.
	17	The teacher took a personal interest in me in my homebased school class.
	15	The teacher shared information about himself or herself with the class in my Home-based school class.
	20	I felt comfortable talking with the teacher about problems that I had in class my Home-based school class.
	30	I had a good relationship with the teacher in my homebased school class.
	25	I liked being in the classroom with the teacher in my homebased school class

In Table 7, the number of participants, the mean values for the Likert scale responses, and the standard deviation for each of the SDT components of autonomy, competence, and relatedness for the blended learning environment and the traditional learning environment are listed. The Likert scale responses ranged from 1 for strongly disagree to a value of 5 for strongly agree. The mean values were calculated from the respondents' corresponding numeric selection on the Likert scale.

Table 7

Standard Deviation, Mean Values, and the Number of Participants for Each SDT Component in the Blended Environment and the Traditional Environment

Component	Environment	N	Mean	Standard Deviation
Autonomy	Blended	33	3.576	.660
Autonomy	Traditional	33	3.376	.779
Competence	Blended	33	4.086	.743
Competence	Traditional	33	3.707	.853
Relatedness	Blended	33	3.750	.634
Relatedness	Traditional	33	3.484	.822

Table 8 displays the statistical analysis derived from the paired sample t test in the computer program SPSS. The data include the number of respondents (n), the mean values (M), the standard deviation, the confidence interval for 98% at $\alpha = .02$, the statistical Critical Values (CV), the Test Statistic (t_{val}), the degrees of freedom (df), and the probability value (p_{val}). Research Questions 1, 2, and 3 were based on hypothesis testing, and data from Table 8 were used to answer each research question and draw conclusions as to whether or not the hypothesis could be rejected based on the statistical measures.

Table 8

T-Test Statistics for Paired Samples in Learning Environments for SDT

Pairing	n	M	SD	df	CV	t_{val}	α	p_{val}
Autonomy Blended & Traditional	33	.200	.687	32	2.037	1.671	.02	.104
Competence Blended & Traditional	33	.379	.873	32	2.037	2.492	.02	.018
Relatedness Blended & Traditional	33	.265	.802	32	2.037	1.899	.02	.067

Table 9 displays the quantitative statistical analysis for Research Questions 4 and 5. The data includes number of respondents (n), the mean values (M), the standard deviation, the confidence interval for 98% at $\alpha = .02$, the statistical Critical Values (CV), the Test Statistics (z_{val}), and the probability statistic (p_{val}). To derive the standard scores or z scores, the researcher used SPSS to calculate the standard deviations and the means. The Texas Instrument (TI)-84 Plus C Silver Edition graphing calculator was used to derive the z scores (z_{val}) and the probability values (p_{val}). Research Questions 4 and 5 were based on hypothesis testing, and data from Table 9 were used to answer each research question and draw conclusions as to whether the hypothesis could be rejected based on the statistical measures.

For the respondents, the Likert scale responses ranged from 1 for strongly disagree to a value of 5 for strongly agree. Because the quantitative measures for Research Questions 4 and 5 were based on hypothesis testing which provided a threshold

for rejecting the hypothesis if the z scores were positive, the researcher converted the Likert scale numeric responses for analysis. The conversion values are displayed in Table 10.

Table 9

Z-Scores Statistics for Research Questions 4 and 5

Pairing	n	M	SD	α	CV	Z_{val}	P_{val}
Research Question 4							
Goal and Time Management	33	1.100	.740	.02	2.054	8.534	0
Research Question 5							
Working Independently and Self-Directed Learning	33	1.103	.790	.02	2.054	8.027	0

Table 10

Conversion Description for Likert Scale to Calculate the Z Scores

Original Scale	Likert Scale Descriptor	Converted Scale
1	Strongly Disagree	-2
2	Disagree	-1
3	No Opinion	0
4	Agree	1
5	Strongly Agree	2

For Research Questions 4 and 5, 21st Century Student Outcomes were examined for the blended learning environment. The following research questions were used in the investigation. The fourth and fifth research questions used quantitative and qualitative questions in the survey instrument.

4. Does the blended environment for students enrolled in the Soar Program meet

the 21st Century Student Outcomes with respect to Goal and Time Management?

5. Does the blended Environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Work Independently and Self-Directed Learning?

Research Questions 4 and 5 had both quantitative and qualitative questions.

Table 11 matches the open-ended qualitative survey questions with the corresponding research questions. Creswell (2003) stated that a dual methodology of data collections and analysis has a greater possibility of providing a richer understanding of the questions. Research Question 4 investigated goal and time management in the blended learning environment. Survey questions 62 and 63 solicited responses directly related to goals, planning, and time management. Research Question 5 examined working independently and self-directed learning. Survey questions 64, 65, and 66 asked the participants to provide responses on how the blended learning experience has influenced their perception of these skills in personal and academic endeavors.

Tables 12-16 list all of the authentic responses as they were direct statements entered by the participants. These responses correspond to Research Questions 4 and 5 in the following manner. Table 12 and Table 13 provide responses for survey questions 62 and 63 respectively which provided feedback to Research Question 4. Tables 14-16 yield responses to survey questions 64, 65, and 66 respectively which provide feedback to Research Question 5.

Table 11

Survey Questions that Respond to Qualitative Responses for Research Questions 4 and 5

Corresponding Research Question	Question Number	List of Survey Questions
Number 4	62	How has participation in the blended learning course influenced your approach to goal setting with academic and/or personal tasks?
	63	Participation in the blended learning course has change your mind and approach to planning and time management in the following ways...
Number 5	64	How has participation in the blended learning course influenced your skills and abilities to work independently?
	65	How has participation in the blended learning course helped you with starting new academic or personal experiences and sticking with those experiences to completion?
	66	How has participation in the blended learning course helped you to gather and analyze information from previous experience to use in current experiences?

Table 12

List of Authentic Responses to Survey Question 62 for Qualitative Research Question 4

How has participation in the blended learning course influenced your approach to goal setting with academic and/or personal tasks?

I learned how to pace myself to get things done

It has taught me to work hard and kept me more organized than a regular class.

Being here at the blended learning course influenced me by showing me that no matter the difficulty of the task if you put your mind to it you can do it.

When I was in there they helped me set a goal. I did four thing in each class and got it done.

It help me learn things in that class better

By being able to plan ahead and finding different strategies for my goals.

It helped me realize how important goals are.

In my, "blended learning class" I was able to prioritize what work I wanted to do rather than what actually needed to be done, I was able to track the calendar and resolve decisions based on timing, I knew my deadlines and it was very easy to calculate the bare minimum I had to put forward in order to get the result from the class that I wanted. They weren't goals they were more mile markers.

It lets me work at my own pace, which makes it easier on me to motivate myself to do better and get through high school.

It has made me feel more confident in this setting to pursue my goals.

The Blended Learning Course Has Helped Me Get Closer To Graduating.

It helped me get trough things faster because I only have a month to finish this course before the new school year

it helped me 100 % and made things alot easier for me.

It has helped me become more organized with my plans to achieve an academic or personal goal.

Not really I already have my careers goals

It has influenced me to set a goal and figure out how to reach that goal in a certain matter of time

I had certain times that i wanted to be done with the course so it pushed me to get done

Being apart of the blended learning has help me keep my sort term goals and also help accomplish them more.

I am more focused on setting goals

(continued)

How has participation in the blended learning course influenced your approach to goal setting with academic and/or personal tasks?

Since i was working on my own pace, i had to learn to work faster, do most of my work without the teacher being there. It has helped me do my work better when i was in school so hopefully it'll help in college.

Setting a completion goal, I knew I had to get it done and I worked hard to meet those due dates.

the blended course helped me set goals in other classes and assignments.

Showed me that i didn't have to set a goal, was always ahead at my own paste

It made it a lot easier for me to make goals and achieve them.

I know the amount of time I have and I am able to set goals for certain days so I can accomplish my tasks on time.

Participating in blended learning has helped me by allowing me to work at my own speed and manage my own time. I would set goals and set a specific time frame for myself to achieve that goal.

Yes

The way my class was set up helped me to prepare goals and achieve them by completing tasks given by my teachers and tasks given by Gradpoint. This helped me to finish my class on time and with a high A.

It made me want to get things done

Participating has helped me actually study more and success in life, by setting my goals.

it taught me how to manage my time more so I can do more class work during the day

Table 13

List of Authentic Responses to Survey Question 63 for Qualitative Research Question 4

Participation in the blended learning course has change your mind and approach to planning and time management in the following ways...

It taught me how to get necessary things done on a time limit because I would have to have things in on time and on occasion, a short time period.

Yes I have learned how to plan for work and projects more efficiently.

by giving me a time I had to complete my work by

Being here at the blended learning course has changed my mind on planning and management because they tell you to go home and do work at home and me personal i work my schedule around school work , they always say school comes first , with school you will have better

Understanding different material.

It allowed me to say well i can finish the class on this day but id rather finish it on this day so I'm gonna work on it a little after school and get this many chapters/sections done to day.

Because if you do your work and stay on it, then you won't have a lot to do at the end of time to submit .

I'm not sure

It has helped me devote more time to school work and getting assignments done faster

just staying focus and taking my time with doing things.

It has helped me develop new skills in planning and has introduced better ways to manage time

It helps me to get ready for the world. Its telling me that I have to be ready to face the work with a smile.

Work more away from [REDACTED] to finish in a more timely manner

I had more time to focus

To be more efficient

The course has taught me to use my time wisely because I have the opportunity to get my work done faster than normally in a reagular highschool class.

It has helped me to do some work on the side and outside of school, but mostly I was teaching myself the class. So everything was quite essentially left up to me to complete. So it wasn't that it developed my time management it was that it was understood early on that if I did not take time out to finish then I simply would not do so.

Going to school, working and cheering

The blended learning has helped with time management more

(continued)

Participation in the blended learning course has change your mind and approach to planning and time management in the following ways...

I can accomplish my goals, they care about me

It helped me certain things out like my goal is to do section 1-3 in one day and do 4-6 the next day.

Setting a completion goal.

since I can work at own pace in the blended course, this helped in other classes at my home school.
Working at my own paste

It has changed the way my planning skills and stay on time.

I feel more in control of my education and I can take my time and not rush to learn things.

Participating in blended learning improved my scheduling skills and made me think more about how I spend my time.

Yes

My time management skills have changed due to this class because I am preparing for things now and getting them done when I need to and not when I want to.

To get things done

By being organized, and being able to complete more of my tasks which I may need to be done.

yes it has changed my mind set

Table 14

List of Authentic Responses to Survey Question 64 for Qualitative Research Question 5

How has participation in the blended learning course influenced your skills and abilities to work independently?

Sometimes I would get stumped on a unit and have to sit down with myself and go sentence by sentence and figure it out because my teacher would be busy or I'd be working at home.

I have learned how to correct myself and realized how important double checking myself is.

Being here has influenced my skills because i know that i can work alone without being interrupted by anything , classrooms are always quiet , And it showed me independence because the teachers always keep your confidence up when they say You Can Do It.

By taking more notes and reviewing the material more than once.

I feel since i could work at my own pace i could go into more depth with certain things i didn't understand .

I Like To Work Independently So It Helped Me Not To Depend On Others For Answers Or How To Do It

I can learn to do things on my own and work out them on my own if I really put my mind to it.

It hasn't really improved my work skills all that much because I already worked better by myself

it gives me something to do after school when I don't have homework or when I get out of practice.

It has helped me improve my ability to work independently and my independent working skills.

I can read a lot better because of this blended learning course.

I have learned I sometimes work better alone

It's easier for me to learn there

Did course on my own besides a few times I asked for assistance

I've become stronger in working independently because the online classes basically taught me how to teach myself.

This class really helped me realize that there is a great way to learn on my own, by taking the pressures from a traditional classroom out of the equation and letting me dominate my own autonomy I was much happier in class, I was also more likely to take breaks and back down at times, however, the overall environment and independent work resonated well with me.

It has helped me learn to work things out better by myself instead of depending on other people
The course makes you more independent and you count on yourself more.

I learn to try to come up with answers on my own first

(continued)

How has participation in the blended learning course influenced your skills and abilities to work independently?

I learned i had to do most of my work by myself because it was one teacher in class full of 10 students so he/she couldn't come and help all the time.

I feel I can get more done working independently.

I was able to work at my own pace and not being worried about other people's participation or doing their part in an assignment.

Work at my own speed and not have to wait on others to catch up

Ive always preffered to work alone.

I work better on my own now and I don't have to ask a lot of questions.

Participating in blended learning placed the work on me and made me choose when to work on it and when not to. I enjoyed learning that I can do anything when I put my mind to it.

Yes

Working independently has never been a problem for me. However, I feel now I am able to work more without the teacher than I have in the past.

To get stuff done

The teacher doesn't help me all the time, and or checks over my work like regular school so, it gives me more focus honestly to be able to be more independently. I don't like someone checking over me so it really makes me feel comfortable.

I can work by myself or with others

Table 15

List of Authentic Responses to Survey Question 65 for Qualitative Research Question 5

How has participation in the blended learning course helped you with starting new academic or personal experiences and sticking with those experiences to completion?

The excitement of the final product and knowing I did it mostly myself.

It has taught me that there is always a goal and the reward in the end is worth the hard work and time.

Being here at the blended learning course helped me by teaching me not to give up and if I keep trying and never give up because no matter how hard a situation may be never give up, for example if you continue to take notes and do your work and then the quiz comes up and you fail they're going to tell you to do it again and keep trying.

By being more strategic and logical.

Well at the blending schools I love my teachers and they pushed me to do good.

I Was Moving At My Own Pace So I Wasn't Bored With It I Wasn't Force To Do Unneeded Things

I learned to have good self discipline

It pushed me to stick with my goals and not give up on them

it keeps me on the right path.

It has provided me with skills that I can use to complete new academic or personal experiences.

It help me because it put faith in my heart that I could do it.

Working independently is for me, like completing changing out my motor in my truck
I can learn it at my own pace

Because the course was all at my own pace and my responsibility

I have learned skills in the blended learning classes that I wouldn't have in conventional classes.

This course has opened my eyes to various learning opportunities mostly because it taught me of a way to independently learn and to teach myself material and to grasp my own understandings. Through that the information was much more likely to stick with me because I had to go through the process myself, I had to guide myself.

It helped me see that I don't necessarily need someone in front of me teaching that I can teach myself but may need help in some areas

The course has made me want to be more open to new ideas and wanting to learn about more things that either the teacher can help with or having outsiders help.

focusing more on my goals

(continued)

How has participation in the blended learning course helped you with starting new academic or personal experiences and sticking with those experiences to completion?

My teacher realize i was doing my work the hard way so she taught me a couple things and since then i was using them while i was working.

I realized working alone, I can teach myself a lot without the help of the teacher.

The blended course helped me with make better choices in completing the course and at my home school.

Keep moving foward and being ahead

I tend to now complete many more things and stay motivated.

I tend to now complete many more things and stay motivated.

I learned from participating in blended learning that once you start something you should never give up. Make sure you see it through all the way to the end

Yes

This year my math grade changed tremendously because of the help my teachers gave me. With their help I was able to experience new learning and personal experiences.

It made me learn more and be more interested

It's helped me be motivated into knowing I can finish everything and become a successful person in the future.

before high school I didn't know what I wanted to do with my future but since I gone to [REDACTED] and talked to the teachers I know what I want in life

Table 16

List of Authentic Responses to Survey Question 66 for Qualitative Research Question 5

How has participation in the blended learning course helped you to gather and analyze information from previous experience to use in current experiences?

Time management played a major role.

I have learned a lot from my classmates who were older than me and they gave me advice that they wished they knew when they were my age. I feel like I have gained so much with being in a class with people that I wouldn't have known without this program.

It has helped by showing me that taking notes is a big part in gathering information , gathering notes just may help me in the future .

By using real life examples to help my understanding.

They just opened my eyes a little more to things that at a regular school i wouldn't have even tried or cared for.

With Everything Being Online You Just Use Your Online Skills Which Is Tought At School

I've adapted to new things

It elaborated on the things that I already knew and helped me use the skills I had already developed to good use

I wouldn't mind coming here again the teachers are outstanding but it helps alot to take classes here if u feel left out.

It has helped me understand skills used to pull together specific details from previous experiences that I can use for current experiences.

It help me because the lessons had lots of info on it so that help me wright notes.

Makes some situations easier

It's better for me to understand

Taught me to read all details in the text of the subject I was learning about

It helped me to make instruction easier to compare the problems with everyday situations that I have. I learned how to gather my own information rather than someone teaching or showing me.

(continued)

How has participation in the blended learning course helped you to gather and analyze information from previous experience to use in current experiences?

A lot of the tools I learned throughout my entire school experience are no longer existent in the schools of now, the way a person learns has changed drastically in the last few months, maybe not for the better at all. What experience I took was to be open and to examine this new way of learning, from past experiences I learned to be open and at least consider new ideas. My past experience was this, I have teachers who no longer teach me, in large lavish governments schools that don't use the luxurious campus or their thousands of dollars of books. Yet I'm restricted to seat time and school based computer programs that not for the better at all. What experience I took was to be open and to examine this new way of learning, from past experiences I learned to be open and at least consider new ideas. My past experience was this, I have teachers who no longer teach me, in large lavish governments schools that don't use the luxurious campus or their thousands of dollars of books. Yet I'm restricted to seat time and school based computer programs that no longer work. In the blended learning environment it took the expectation I had on the teacher away. The pressure of being present in school for no apparent reason, simply for seat time which in no way attributes to learning. I was in control of my education, and I didn't have the pressure of school simultaneously which made the quality of education less than that of before technology in schools but also better than sitting in a building all day by law on a computer doing work id rather be dong at home and could be doing at home. The implementation of technology at my home school was an utter failure and had no systems in which to keep kids on any form of track, but in my blended learning classroom I was able to stress free complete a class, and still actually get some form of mediocre education from it, unlike at my high school.

It helped me see that i don't always need guidance from a teacher

I have gathered more information from the course then I have in the past and its because now I have more knowledge to help me throughout the rest of the course and life.

I have learned to ask questions and take more control of my learning

At first i used to copy any giving information now i just gather the important information so it would be easier on me and the teacher, so i can use this later in life.

Working at my own pace has allowed me to take notes needed and study them to where I can grasp and understand the material. This will help me with future math classes in college.

The participation in the blended classes helped me gather information that not only useful but also important.

Show me how far i can get on my own

I dont know how to answer this one.

I am able to view past lessons to help prepare for future tests.

The course I took had me take things I've learned in the past and use them in the class I was taking.

Participating in blended learning made me think through the questions that the quizzes or sections were talking about and I would try to relate them to myself to help remember more on the test.

Yes

(continued)

How has participation in the blended learning course helped you to gather and analyze information from previous experience to use in current experiences?

It gave me more information

It's helped me to see that I can accomplish whatever I want. with dedication.

it taught me to use my head more and not just do

Summary of Results

For this study, a mixed-method survey was employed to solicit responses from high school students who were concurrently enrolled in a blended learning environment and in a traditional high school environment. The purpose of the study was to examine if student self-determination components of autonomy, competence, and relatedness, as defined by Deci and Ryan (2002), would be impacted by participating in a blended learning environment. As well, the researcher examined if participation in the blended learning environment would have an impact student perceptions of their attainment and use of the 21st Century Student Outcomes of goal and time management, working independently, and self-directed learning as defined by the Partnership for 21st Century Learning (2015).

Both quantitative and qualitative data were collected using an electronic survey tool, and 33 of a possible 134 eligible students who were concurrently enrolled in the Soar Program responded to the survey. Demography data were also collected from each participant but were only used for the purpose of describing the sample population and not for any statistical analysis. Tables 4 and 5 displayed the demography data.

For Research Questions 1, 2, and 3, only quantitative responses were solicited in the survey. The data collected in a 5-part Likert scale had responses ranging in values

from 1 to 5. Those values were used to calculate descriptive statistics as well as *t*-test analysis for paired sample tests for Research Questions 1, 2, and 3. Only the results were presented in this chapter within Tables 6, 7, and 8.

For Research Questions 3 and 4, the same 5-part Likert scale was used to collect data responses. Because the research questions were formulated to test for a conclusion being greater than zero for the z-score results, the researcher converted the responses from the Likert scale in order to ascertain the results in the correct format. Table 10 describes the conversions made from the Likert scale values to the computation values for Research Questions 4 and 5. Table 9 displays the data results from the analysis of the survey questions related to Research Questions 4 and 5.

The final part of this research study elicited qualitative responses for Research Questions 4 and 5. The responses were collected in the same electronic survey through the use of five open-ended survey questions. Students typed in their responses, and their authentic responses were provided in Tables 12-16.

Chapter 5 of this dissertation answers each of the five research questions and draws conclusions supported by the statistical analysis from the data collected, analyzed, and presented in Chapter 4.

Chapter 5: Conclusion

Introduction

There are many more intricacies in life in the 21st century than there have been in previous centuries. With those intricacies and choice, many students are searching for ways to fit school around life and not fit life around school as in past centuries (Kelly et al., 2009). This research study has investigated the options and opportunities high school students have to exercise the choices and freedoms that many researchers such as Allen et al. (2007), Akkoyunlu and Yilmaz Soylu (2006), and Horn and Staker (2015) said a blended learning environment offers. This researcher surveyed high school students to answer the five research questions for this study. The results from the data analysis have been presented in Chapter 4 of this research study. In this chapter of the research study, the researcher answers each research question based on the results from the analysis of data.

Research Questions

Data validity is imperative in research. One of the first thresholds that a researcher must meet to establish is data sample size valid to support the analysis (Byrd, 2016; Penn State University, 2016; University of Alabama at Huntsville, 2016). The Central Limit Theorem states that “As the size of the sample increases, the sampling distribution of the mean approaches a normal distribution” (Byrd, 2016). The Central Limit Theorem also states that with a sample size of at least 30, the mean distribution is normally distributed in the sample population and can be asserted with greater certainty that mean distribution is also normal across the population mean (Penn State University, 2016; University of Alabama at Huntsville, 2016). With a sample population of 33

respondents in this research study, it meets this threshold of validity for the sample mean; therefore, the population's mean is accepted as being normally distributed. Both the t tests and z-score tests function on the assumption that the means are normally distributed as their tables most often state in the titles.

Each research questions is presented with its corresponding null hypothesis (H_0) and alternate hypothesis (H_1). The following hypotheses are related to the given research questions. The null hypotheses and alternate hypotheses are placed under the corresponding research questions.

1. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to autonomy?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to autonomy.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to autonomy.

Algebraically, the hypotheses are stated as $H_0: \mu_1 = \mu_2$ and $H_1: \mu_1 > \mu_2$.

2. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to competence?

H_0 : There is no difference in the self-determination of students in a blended

learning environment and the self-determination of students a traditional learning environment with respect to competence.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to competence.

Algebraically, the hypotheses are stated as $H_0 : \mu_1 = \mu_2$ and $H_1 : \mu_1 > \mu_2$.

3. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to relatedness?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to relatedness.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to relatedness.

Algebraically, the hypotheses are stated as $H_0 : \mu_1 = \mu_2$ and $H_1 : \mu_1 > \mu_2$.

4. Does the blended learning environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Goal and Time Management?

H_0 : For Goal and Time Management, mean score in the blended environment will be less than or equal to zero.

H_1 : For Goal and Time Management, the mean score in the blended

environment will be positive.

Algebraically, the hypotheses are stated as $H_0: \mu_1 \leq 0$ and $H_1: \mu_1 > 0$.

5. Does the blended environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Working Independently and Self-Directed Learning?

H_0 : For Working Independently and Self-Directed Learning, mean score in the blended environment will be less than or equal to zero.

H_1 : For Working Independently and Self-Directed Learning, the mean score in the blended environment will be positive.

Algebraically, the hypotheses are stated as $H_0: \mu_1 \leq 0$ and $H_1: \mu_1 > 0$.

In order to answer each of the quantitative research questions with a statistical basis, the following computational data from Chapter 4 are used. Because Research Questions 1, 2, and 3 use the same type data result descriptions, the researcher first endeavors to provide data for Research Questions 1, 2, and 3 found in Table 17. The one directional paired-sample t test was performed on survey data to compare autonomy in the blended environment to autonomy in the traditional environment, to compare competence in the blended environment to competence in the traditional environment, and to compare relatedness in the blended environment to relatedness in the traditional environment. The number of participants, the degrees of freedom for the tests, the test statistics' t_{val} , critical values, p_{val} , and α are used to formulate and validate conclusions for Research Questions 1, 2, and 3.. These values are displayed in Table 17. As well, the test statistics' z_{val} are listed for Research Questions 4 and 5 in order to interpret the

standard score or z-score tests performed on the data for those research questions.

Table 17

Data Analysis Needed to Answer All Research Questions

Pairing	n	df	CV	t_{val}	z_{val}	α	p_{val}
Autonomy Blended & Traditional	33	32	2.037	1.671		.02	.104
Competence Blended & Traditional	33	32	2.037	2.492		.02	.018
Relatedness Blended & Traditional	33	32	2.037	1.899		.02	.067
Research Question 4 Goal and Time Management	33		2.054		8.534	.02	.000
Research Question 5 Working Independently and Self-directed Learning	33		2.054		8.027	.02	.000

Section 1: Research Question 1

1. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to autonomy?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to autonomy.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning

environment with respect to autonomy.

Algebraically, the hypotheses are stated as $H_0: \mu_1 = \mu_2$ and $H_1: \mu_1 > \mu_2$.

To ascertain whether there is a difference in the blended learning environment and the traditional learning environment for the population μ_1 and μ_2 , the researcher presented the null hypothesis that there was no difference in the two environments with respect to autonomy. The algebraically notation for this statement is $H_0: \mu_1 = \mu_2$ as it pertains to the total population. If the null hypothesis is rejected based on the results of statistical analysis, the researcher's alternate hypothesis states that the blended learning environment will provide greater self-determination based on the statistical analysis. The algebraic notation for this statement is $H_1: \mu_1 > \mu_2$.

There are two measures to determine if the hypothesis test meets the threshold for rejecting the null hypothesis.

Setting the level of significance will correspond to the probability that we are willing to be wrong in our conclusion if a type I error was committed. That probability will correspond to certain area(s) under the curve of a probability distribution. Those areas, known as the region of rejection is bounded by a critical value or critical values which are often computed. Alternatively, one might compare the test statistic with the corresponding point(s) on the probability curve. These are equivalent ways of viewing the problem, just different units of measure are being used. In a one-tailed test there is one area bounded by one critical value. (Calkins, 2016, "Power of a Test," para. 2)

The test statistic from the one-tailed paired-sample t -test analysis provides a t_{val} which is compared to the critical value found in a t distribution table of critical values.

By using both aforementioned methodologies described by Calkins (2016), it better ensure that neither a Type 1 or Type 2 error occurs in the conclusion that is reached.

After examining the test statistics $t_{val} = 1.671$ compared to the $CV = 2.0369$ for 32 df and an $\alpha = .02$ confidence interval as well with a $p_{val} = .104$ with the confidence interval of

$\alpha = .02$, the hypothesis test for Research Question 1 of $H_0: \mu_1 = \mu_2$ cannot be rejected.

The $t_{val} = 1.671$ did not exceed the $CV = 2.0369$; as well, the $p_{val} = .104$ was not smaller than the $\alpha = .02$. Therefore, it does not fall beyond the rejection boundary which is to the right of the $\alpha = .02$ for this one-tailed t test. Both statistical measures confirm that there is not enough statistical data to reject the H_0 for Research Question 1.

Section 2: Research Question 2

2. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning environment with respect to competence?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to competence.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to competence.

Algebraically, the hypotheses are stated as $H_0: \mu_1 = \mu_2$ and $H_1: \mu_1 > \mu_2$.

To determine if Research Question 2 meets the statistical standard to reject the

$H_0: \mu_1 = \mu_2$, the same evaluation methods will be employed that were used for Research Question 1 in Section 1 of this chapter in accordance with Calkins (2016). After examining the test statistics $t_{val} = 2.492$ compared to the $CV = 2.0369$ for 32 df and an $\alpha = .02$ confidence interval, as well with a $p_{val} = .018$ with the confidence interval of $\alpha = .02$, the hypotheses test for Research Question 2 of $H_0: \mu_1 = \mu_2$ does meet the threshold for rejecting the H_0 for Research Question 2. The $t_{val} = 2.492$ is larger than the $CV = 2.0369$; therefore, first confirming that there is evidence to reject the H_0 . Upon further examination of the $p_{val} = .018$ with the confidence interval of $\alpha = .02$, this too confirms that the H_0 for Research Question 2 is rejected, because the $p_{val} = .018$ is smaller than the confidence interval of $\alpha = .02$, therefore placing this value to the right of the boundary placing it in the “region of rejection” cited by Calkins (2016).

Since Research Question 2's H_0 has been rejected, the $H_1: \mu_1 > \mu_2$ is accepted which states in expanded form that self-determination is greater for students in the blended learning environment for competence than self-determination for students in the traditional learning environment for competence. Because hypotheses testing will only confirm whether the H_0 is rejected and if rejected that the H_1 is accepted but not offering any measure of degree or significance of the measure, no further statistical assertions can be made to this evaluation.

Section 3: Research Question 3

3. Is there a difference in student self-determination in a blended learning environment and student self-determination in a traditional learning

environment with respect to relatedness?

H_0 : There is no difference in the self-determination of students in a blended learning environment and the self-determination of students a traditional learning environment with respect to relatedness.

H_1 : The self-determination of students in a blended learning environment is greater than the self-determination of students in a traditional learning environment with respect to relatedness.

Algebraically, the hypotheses are stated as $H_0: \mu_1 = \mu_2$ and $H_1: \mu_1 > \mu_2$.

To determine if Research Question 3 meets the statistical standard to reject the $H_0: \mu_1 = \mu_2$, the same evaluation method will be employed that was used for Research Questions 1 and 2 in Sections 1 and 2 of this chapter in accordance with Calkins (2016). After examining the test statistics $t_{val} = 1.899$ compared to the $CV=2.0369$ for 32 df and an $\alpha = .02$ confidence interval as well with a $p_{val} = .067$ with the confidence interval of $\alpha = .02$, the hypotheses test for Research Question 3 of $H_0: \mu_1 = \mu_2$ cannot be rejected. Neither the $t_{val} = 1.899$ exceeded the $CV=2.0369$ as well the $p_{val} = .069$ was not less than $\alpha = .02$; therefore, it does not fall beyond the rejection boundary which is to the right of the $\alpha = .02$ for this one-tailed t test. Both statistical measures confirm that there is not enough statistical data to reject the H_0 for Research Question 3.

Section 4: Research Question 4

4. Does the blended learning environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Goal and

Time Management?

H_0 : For Goal and Time Management, mean score in the blended environment will be less than or equal to zero.

H_1 : For Goal and Time Management, the mean score in the blended environment will be positive.

Algebraically, the hypotheses are stated as $H_0 : \mu_1 \leq 0$ and $H_1 : \mu_1 > 0$.

To answer Research Question 4, the researcher will apply Calkins's (2016) procedure to make a determination as to whether the $H_0 : \mu_1 \leq 0$ can be rejected based on the results of the statistical analysis of the survey results. For this research question, the test statistic is a z_{val} derived from standard score or z-score test analysis which is compared again to the critical value found in a Standard Normal Distribution Table. There is also the additional method of evaluation which involves the use of the p_{val} compared to the confidence interval which is $\alpha = .02$. When examining the results displayed in Table 17 for Research Question 4, the $z_{val} = 8.534$ compared to the CV of 2.0537 from the Standard Normal Distribution Table. Because the $z_{val} = 8.534$ is greater than the CV of 2.0537, the $H_0 : \mu_1 \leq 0$ can be rejected. To confirm this finding using the $p_{val} = 0$ and the confidence interval of $\alpha = .02$, this also confirms that the H_0 will be rejected because the p_{val} does fall to the right of the one-tailed test boundary line of $\alpha = .02$ and in the "region of rejection" (Calkins, 2016). Since the $H_0 : \mu_1 \leq 0$ is rejected by confirmation of both analysis methods, the $H_1 : \mu_1 > 0$ is accepted. In expanded form, H_1 for Research Question 4 states in the blended learning environment, goal and time

management will be positive.

Because hypotheses testing will only confirm the whether the H_0 is rejected and if rejected that the H_1 is accepted but not offering any measure of degree or significance of the measure, no further statistical assertions can be made to this evaluation. However, for Research Question 4, additional data were collected through qualitative measures. The qualitative responses are listed in Tables 12 and 13 for Research Question 4 pertaining to goal and time management.

Some of the responses that were repeated in the qualitative lists centered around prioritizing activities, helping to set a pace, efficiency, and focusing on setting goals. One student stated, “the blended learning course helped me set goals in other classes and assignments.” Another student stated, “It made it a lot easier for me to make goals and achieve them.” Still another student responded, “The Blended Learning course has helped me get closer to graduating.” Another comment was, “It helped me become more organized with my plans to achieve my academic or person goal.” A student expressed the experience this way: “The course has taught me to use my time wisely because I have the opportunity to get my work done faster than normal in a regular high school class.” Another said, “I feel more in control of my education and I take my time not rush to learn things.” One other student stated, “My time management skills have changed due to this class because I am prepared for things not and getting them done when I need to not when I want to.” These student responses support the conclusions the quantitative analysis made by rejecting the H_0 which stated, “For goal and time management, the mean score in the blended environment will be less than or equal to zero” and accepting the H_1 which stated, “For goal and time management, the mean score in the blended

environment will be positive.” The responses made by students toward the blended learning environment were overwhelmingly positive.

Section 5: Research Question 5

5. Does the blended environment for students enrolled in the Soar Program meet the 21st Century Student Outcomes with respect to Working Independently and Self-Directed Learning?

H_0 : For Working Independently and Self-Directed Learning, mean score in the blended environment will be less than or equal to zero.

H_1 : For Working Independently and Self-Directed Learning, the mean score in the blended environment will be positive.

Algebraically, the hypotheses are stated as $H_0 : \mu_1 \leq 0$ and $H_1 : \mu_1 > 0$.

To answer Research Question 5, again the researcher will use Calkins (2016) to determine if the $H_0 : \mu_1 \leq 0$ can be rejected based on the results of the statistical analysis of the survey results. To answer Research Question 5, the same two analyses will be used for the z_{val} as were used for Research Question 4.

When examining the results displayed in Table 17 for Research Question 5, the $z_{val} = 8.027$ compared to the CV of 2.0537 from the Standard Normal Distribution Table. Because the $z_{val} = 8.027$ is greater than the CV of 2.0537, the $H_0 : \mu_1 \leq 0$ can be rejected. To confirm this finding using the $p_{val} = 0$ and the confidence interval of $\alpha = .02$, this further confirms that the H_0 will be rejected because the p_{val} does fall to the right of the one-tailed test boundary line of $\alpha = .02$ and in the “region of rejection” (Calkins, 2016).

Since the $H_0: \mu_1 \leq 0$ is rejected by confirmation of both analysis methods, the $H_1: \mu_1 > 0$ is accepted. In expanded form, H_1 for Research Question 5 states in the blended learning environment working independently and self-directed learning would be positive.

Because hypotheses testing will only confirm the whether the H_0 is rejected and if rejected that the H_1 is accepted but not offering any measure of degree or significance of the measure, no further statistical assertions can be made to this evaluation. However, for Research Question 5, additional data were collected through qualitative measures. The qualitative responses are listed in Tables 14-16 for Research Question 5 pertaining to working independently and self-directed learning.

For responses for Research Question 5 pertaining to working independently, Table 14 listed the responses to the survey question, “How has participation in the blended learning course influenced your skills and abilities to work independently?” Responses included repeated comments around self-monitoring, self-checking, learning to depend on self, independence, and pacing. Specific responses included, “I’ve become stronger in working independently because the online classes basically taught me how to teach myself.” Another stated, “I can learn to do things on my own and work out them on my own if I really put my mind to it.” This response stated, “I feel since i could work at my own pace i could go into more depth with certain things i didn’t understand.” This student makes this comment about gains he/she has made: “I can read a lot better because of this blended learning course.” The following comment was also made:

helped me realize that there is a great way to learn on my own by taking the pressure from a traditional classroom out of the equation and letting me dominate my own autonomy . . . the overall environment and independent work resonated

well with me.

Table 15 listed responses pertaining to the survey question, “How has participation in the blended learning course helped you with starting new academic or personal experiences and sticking with those experiences to completion?” There were repeated comments pertaining to openness to new experiences, a sense of accomplishment, and resiliency. Table 18 contains a list of some of the student comments that support these attributes.

Table 18

List of Student Responses that Support the Attributes for Research Question 5 from Survey Question 65

Direct Authentic Student Responses

The excitement of the final product and knowing I did it mostly myself

It has taught me that there is always a goal and the reward in the end is worth the hard work and time.

By being more strategic and logical.

I Was Moving At My Own Pace So I Wasn't Bored With It I Wasn't Force To Do Unneeded Things

It pushed me to stich with my gives and not give up on them

It has provided me with skills that I can use to compete new academic or personal experience

Because the course was all at my own pace and my responsibility

I realized working on my alone, I can teach myself a lot without the help of the teacher

It made me learn more and be more interested

For Research Question 5, Table 16 provided responses for the opened question,

“How has participation in the blended learning course helped you to gather and analyze information from previous experience to use in current experiences?” Students responded about using past experiences, using previously learned knowledge, being in control more, and being detail oriented. Table 19 lists some of the responses that support these attributes.

Table 19

List of Student Responses that Support the Attributes for Research Question 5 from Survey Question 66

Direct Authentic Student Responses

I have learned a lot from my classmates who were older than me and they gave me advice they wished they knew when they were my age.

showing me that taking notes is a big part in gathering information

They just opened my eyes a little more to things that at a regular school i wouldn't have event tried or cared for.

It elaborated on the things that I already knew and helped me use the skills I had already developed

Taught me to read all details in the text of the subject I was learning about

I learned how to gather my own information rather than someone teaching or showing me

The responses from Tables 14-16 support the fact that the mean value from the analysis of the survey questions for Research Question 5 provide a positive, more holistic description than just the rejection of the null hypothesis. Gall et al. (2003) and Creswell (2003) supported this perspective of qualitative research.

Implications of Finding

Kelly et al. (2009) proposed that 10 years later, schools would look drastically

different. They described a high school model called “cyber schools” (Kelly et al, 2009, p. 201). “The cyber school is not a physical place, but a service, available anytime, anywhere. Students may earn all of their high school credits at the cyber school or use it to complement studies at a local campus” (Kelly et al., 2009, p. 201). They saw this concept as being futuristic, but it already existed in the Soar Program since 2005. The points are these. A greater effort must be made by K-12 educators and practitioners to publish findings on the successes and shortcomings of programs that are implemented so this knowledge can be added and utilized in the discipline of education. As well, researchers must fully investigate to find published as well as unpublished resources that fit the parameters of their topic. The researcher believes there are many unpublished and undiscovered resources with invaluable information available in districts across the nation. This researcher also believes this study has provided insight for stakeholders invested in improving K-12 education when they plan, implement, revise, and reimplement blended or cyber-based learning instructional models. The insight into how competence, goal and time management, working independently, and self-directed learning were impacted in the study of a blended learning environment are the elements that should be taken into consideration from this study.

SDT is based on three basic principles of autonomy, competence, and relatedness (Deci & Ryan, 2002). The 21st Century Student Outcomes of time and goal management, working independently, and self-directed learning are those “soft skills . . . difficult to measure . . . intangible” (Sharma & Sharma, 2010, p. 41) attributes also described as the “non-cognitive skills . . . personality factors” (Kyllonen, 2013, p. 17) that employers expect from their workers in the 21st century (Hall & Farkas, 2011). In this

study, the blended learning environment supported student perceptions that their competence, time and goal management, working independently, and self-directed learning were positively impacted by their participation in the blended learning program. With a larger sample population, greater insight may be gained for these three areas from this study as well as the areas of autonomy and relatedness.

Recommendations

With the importance of the SDT components and 21st Century Student Outcomes, this researcher thinks more focused and directed attention should be given to making students in blended learning environments aware of the noncognitive skills and attributes that can be impacted through participating in a blended learning class. This study supports the blended learning environment having a positive impact on student competence, goal and time management, working independently, and self-directed learning. With this information, teachers and instructional leaders in these environments should include direct instructional opportunities on how these attributes are used and enhanced in the blended learning environment. Educational leaders should also instruct students on how the transfer of these skills are useful in other academic and personal areas but most importantly how important these skills are beyond their K-12 career in the 21st century work force. Not only should the awareness start in the orientation process for a blended learning environment, but the skills should be identified and nurtured throughout the blended learning experience. This may be an opportunity for a research study to examine the impact of providing additional awareness and facilitation of these noncognitive skills and attributes to blended learning participants.

The results of this study supported a positive relationship for students in the three

areas of competence, goal and time management, and working independently and self-directed learning in this blended learning environment. Concerted efforts should be made by the leaders of the Soar Program and similar programs across the nation to capitalize on this information to improve student opportunities to advance these noncognitive skills and attributes.

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Appendix A

Outline of 21st Century Skills by the Partnership for 21st Learning

- I. 21st Century Student Outcomes (Rainbow)
 - A. Key Subjects and 21st Century Themes
 - a. Subjects
 - i. English, reading language arts
 - ii. World Languages
 - iii. Arts
 - iv. Mathematics
 - v. Economics
 - vi. Science
 - vii. Geography
 - viii. History
 - ix. Government and Civics
 - b. Global Awareness
 - c. Financial, Economic, Business and Entrepreneurial Literacy
 - d. Civic Literacy
 - e. Health Literacy
 - f. Environmental Literacy
 - B. Learning and Innovation Skills
 - a. Creativity and Innovation
 - i. Thinking Creatively
 - ii. Work Creatively with Others
 - iii. Implement Innovation
 - b. Critical Thinking and Problem Solving
 - i. Reason Effectively
 - ii. Use System Thinking
 - iii. Make Judgments and Decisions
 - iv. Solve Problems
 - Communication and Collaboration
 - i. Communicate Clearly
 - ii. Collaborate with Others
 - C. Information, Media and Technology Skills
 - a. Information Literacy
 - i. Access and Evaluate Information
 - ii. Use and Manage Information
 - b. Media Literacy
 - i. Analysis Media
 - ii. Create Media Products
 - c. ICT (Information, Communication and Technology) Literacy
 - i. Apply Technology Effectively
 - D. Life and Career Skills
 - a. Flexibility and Adaptability
 - i. Adapt to Change
 - ii. Be Flexible
 - b. **Initiative and Self-Direction**
 - i. Manage Goals and Time

1. Set goals with tangible and intangible success criteria
 2. Balance tactical (short-term) and strategic (long-term) goals
 3. Utilize time and manage workload efficiently
 - ii. Working Independently
 1. Monitor, define, prioritize and complete tasks without direct oversight
 - iii. Be Self-directed Learners
 1. Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
 2. Demonstrate initiative to advance skill levels towards a professional level
 3. Demonstrate commitment to learning as a lifelong process
 3. Reflect critically on past experiences in order to inform future progress
 - c. Social and Cross-Cultural Skills
 - i. Interact Effectively with others
 - ii. Work Effectively in Diverse Teams
 - d. Productivity and Accountability
 - i. Manage Projects
 - ii. Produce Results
 - e. Leadership and Responsibility
 - i. Guide and Lead Others
 - ii. Be Responsible to Others
- II. 21st Century Support Systems (Shadow from Rainbow)
- A. 21st Century Standards
 - B. Assessment of 21st Century Skills
 - C. 21st Century Curriculum and Instruction
 - D. 21st Century Professional Development
 - E. 21st Century Learning Environments**

Appendix B

Profile of a South Carolina Graduate



from the South Carolina Education Oversight Committee
 P.O. Box 11867, Room 227 Blatt Building
 Columbia, South Carolina, 29211
 Contact: Dana Yow, (803) 734-6164

News – For Immediate for Release

February 10, 2015

EOC adopts statewide profile of the graduate

Profile of the South Carolina Graduate

World Class Knowledge

- Rigorous standards in language arts and math for career and college readiness
- Multiple languages, science, technology, engineering, mathematics (STEM), arts and social sciences

World Class Skills

- Creativity and innovation
- Critical thinking and problem solving
- Collaboration and teamwork
- Communication, information, media and technology
- Knowing how to learn

Life and Career Characteristics

- Integrity
- Self-direction
- Global perspective
- Perseverance
- Work ethic
- Interpersonal skills

transformSC tomorrow won't wait for our students Approved by SCASA Superintendent's Roundtable and SC Chamber of Commerce **NEW CAROLINA** an initiative of

Columbia – At its February 9 meeting, the Education Oversight Committee (EOC) adopted the “Profile of the South Carolina Graduate”, a set of skills and characteristics that are critical for all graduates of high schools in South Carolina. Originally written by a group of South Carolina school district superintendents in 2012, the profile has also been adopted and approved by the South Carolina Association of School Administrators Superintendent’s Roundtable, the South Carolina Chamber of Commerce, and the South Carolina Council on Competitiveness.

“The profile of the graduate reminds us all what the end-goal is for students that move on to careers

either before or after continuing their education beyond high school,” said David Whittemore, Chairman of the EOC. “Rigorous standards focused on the knowledge that young people need are important but the profile reminds us that life and career characteristics like perseverance and self-direction are critical for success as well.”

Whittemore, a businessman from Easley, explained that the concerns of business often point to today’s graduates lacking skills in critical thinking, problem solving, and “soft-skills” like integrity and a strong work ethic. “Families and communities also have an important role in helping our children develop these life skills.”

The SC Education Oversight Committee is an independent, non-partisan group made up of 18 educators, business persons, and elected leaders. Created in 1998, the committee is dedicated to reporting facts, measuring change, and promoting progress within South Carolina’s education system.

Appendix C
Student Survey

Thank you for participating in the research study. The survey should take you 20-25 minutes to complete. If you need additional time, you are allowed to continue. At any time, you can choose not to participate in the study and you will not be penalized in any way.

For this section of questions, please provide the following information which will be used to describe the overall group of students who participate in the research study.

1. Gender Male: _____ Female: _____
2. What is your age: 13 years old _____; 14 years old _____; 15 years old _____
16 years old _____; 17 years old _____; 18 years old _____
19 years old _____; 20 years old _____
3. As of the end of the 2015-16 school year, what is your class level?
_____ Freshmen; _____ Sophomore; _____ Junior; _____ Senior
4. What ethnicity do you identify with?
_____ African American; _____ Caucasian; _____ Asian American;
_____ Hispanic; _____ Other: _____
5. What language do you consider your first language?
_____ English; _____ Spanish; _____ Other: _____
6. Other than the course you are now taking, how many courses have you completed in the _____ Academy?
_____ Zero courses; _____ One course; _____ Two courses;
_____ Three Courses; _____ Four or more courses
7. What do you think your Grade Point Average for all courses you have taken at the _____ Academy?
_____ A- 4.00 or above
_____ B- 3.00 to 3.99
_____ C- 2.00 to 2.99
_____ D- 1.00 to 1.99
_____ F- 0.99 or below
8. What do you think your overall Grade Point Average is currently for all courses taken for high school credit at the _____ Academy and at your homebased school?
_____ A- 4.00 or above
_____ B- 3.00 to 3.99
_____ C- 2.00 to 2.99
_____ D- 1.00 to 1.99
_____ F- 0.99 or below

9. Do you currently receive any special education services through an IEP (Individual Education Plan)?

Directions: For this section of questions, think of the best class you had in the [REDACTED] Academy and the best class you had at your homebased school when answering these questions. Think about what it was that made the class the best. For each question mark the indicator that best describes your opinion.

Likert Scale: 1-Strongly Disagree; 2-Disagree; 3-No Opinion; 4-Agree; 5-Strongly Agree

10. There was a sense of concern for my well-being in at my homebased school class.
11. The teacher knew me well in my blended learning class.
12. We had assigned seats in the homebased school class.
13. I felt connected with others in my blended learning class.
14. The teacher shared information about himself or herself with the class in my blended learning class.
15. The teacher shared information about himself or herself with the class in my homebased school class.
16. I felt comfortable talking with the teacher about problems that I had in class in my blended learning class.
17. The teacher took a personal interest in me in my homebased school class.
18. In my homebased school class, the teacher was open to suggestions about how to make class better.
19. There was a sense of concern for my well-being in my blended learning class.
20. I felt comfortable talking with the teacher about problems that I had in class my homebased school class.
21. I had a good relationship with the teacher in my blended learning class.
22. The teacher took a personal interest in me in my blended learning class.
23. I liked being in the classroom with the teacher in my blended learning class.
24. I felt connected with others in my homebased school class.
25. I liked being in the classroom with the teacher in my homebased school class.

26. I felt this homebased school class was useful to me.
27. I think my grade in this blended learning class reflects my effort.
28. The teacher knew me well in my homebased school class.
29. The online instructional system and teacher made this subject interesting to me in my blended learning class.
30. I had a good relationship with the teacher in my homebased school class.
31. The teacher made this subject interesting to me in my homebased school class.
32. Overall, I am satisfied with this blended learning class.
33. I felt this blended learning class was useful to me.
34. In my blended learning class, the teacher was open to suggestions about how to make class better.
35. The online instructional system and teacher connected our learning with real life examples in my blended learning class.
36. I think my grade in this homebased school class reflects my effort.
37. My teacher did a good job of educating me in this blended learning class.
38. It was OK to make mistakes in this blended learning class.
39. In my blended learning class, students were allowed to bring real life examples to the learning process.
40. Overall, I am satisfied with this homebased school class.
41. My teacher did a good job of educating me in this homebased school class.
42. It was OK to make mistakes in this homebased school class.
43. I think my grade in this homebased school class reflects the amount I learned.
44. The teacher in my homebased school class connected our learning with real life examples.
45. I think my grade in this blended learning class reflects the amount I learned.

46. In my homebased school class, students were allowed to bring real life examples to the learning process.
47. We had assigned seats in the blended learning class.

When answering the next fourteen questions, answer them with respect to the blended learning course.

Likert Scale 1-Strongly Disagree; 2-Disagree; 3-No Opinion, 4-Agree; 5-Strongly Agree

48. . Because I was allowed to work at my own pace, I was able to complete the course faster than if I had been enrolled in a traditional classroom.
49. Because I was allowed to work at my own pace, I completed more work outside of class than I would have completed outside of class if I was enrolled in a traditional class.
50. Since I have been participating in the blended learning course, I do more scheduling of task even outside of school work.
51. I feel that participating in the blended learning course has helped me manage my time better to accomplish task in a timely manner.
52. I feel that participating in the blended learning course has helped me set, monitor and maintain realistic short term goals that will lead me to accomplish long term goals I have planned.
53. The blended learning course has helped me realize that the process of learning how to learning is just as important as the final grade in the course.
54. The blended learning course has helped me understand the importance of setting goals.
55. The blended learning course helped me develop better skills to recognize what needs to be done and check my progress without the teacher's help all the time.
56. The blended learning course helped me put tasks in order to complete them more efficiently.
57. The blended learning course has helped me feel comfortable working without the teacher constantly checking my progress.
58. I find myself exploring area more in-depth than what is required from topics introduced in my blended learning course.

59. I have taken it upon myself to move ahead in course work in my blended learning course to help my understanding of current and future materials.
60. I feel the blended learning course has help me recognize and use skills that will support me to be more successful in learning throughout my lifetime.
61. . I feel the blended learning course has helped me to think more about and use my past learning and experiences to be more successful in the future.

Directions: All information is important and your personal experiences are valuable. Answer the following questions or complete the following statements by typing in as many specific statements that you think accurately complete the sentence or answers the question. Separate your responses with a semi-colon then hit enter to go to a new line.

62. How has participation in the blended learning course influenced your approach to goal setting with academic and/or personal tasks?
63. Participation in the blended learning course has change your mind and approach to planning and time management in the following ways...
64. How has participation in the blended learning course influenced your skills and abilities to work independently?
65. How has participation in the blended learning course helped you with starting new academic or personal experiences and sticking with those experiences to completion?
66. How has participation in the blended learning course helped you to gather and analyze information from previous experience to use in current experiences?

Appendix D

Permission Letter to Use Survey



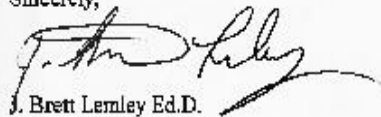
Clear Horizons Early College High School

July 19, 2016

To Whom It May Concern,

I am aware of the study being conducted by Keith Wilks in support of his pursuit of a doctoral degree from Gardner-Webb University in Boiling Springs, North Carolina. Mr. Wilks has requested permission to use my survey instrument in his study. I have granted him full use the instrument, allowing him to use the instrument in its original form or to modify as needed.

Sincerely,



J. Brett Lemley Ed.D.

Appendix E

Permission to Administer Research Surveys

Request for District Collaboration for Doctoral Candidates

The [redacted] has set up a means of support for individuals who are seeking doctorate degrees and who agree to develop a dissertation on a topic that is mutually agreeable and beneficial to the individual and District.

To be eligible, a person must:

- have been an employee of the [redacted] for at least six months;
- select a topic approved by the District;
- orally present topic to district committee; and
- commit to completion of the data collection and analysis submitted to the District within an allotted time.

Employees who are interested in being considered for this opportunity may complete the form below and submit it and related documents to the Associate Superintendent for Instruction, [redacted]

Name	<u>Wilks</u> <u>Vincent</u> <u>Keith</u>
	Last First Middle
Address	[redacted]
	Street City State/Zip
School/Location	[redacted]
Current Position	[redacted]
College/University	Gardner-Webb University
Doctoral Program of Study/Expected Date of Completion	Ed.D in Educational Leadership
Suggested Dissertation Topic (Attach the research proposal)	A Study of the Self Determination of High School Students in a Blended Learning Environment and Meeting the Goals for 21 st Century Student Outcomes
Expected Completion Date of Data Analysis	September 2016

By my signature below, I agree to complete the data collection and analysis for my dissertation within three months and submit it to the District by September 30, 2016. I also agree to maintain the confidentiality of the data provided to me by the district and will remove personal and school identification from all published work.

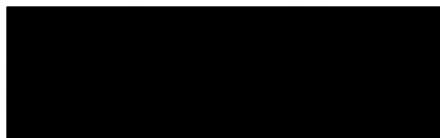
Vincent Keith Wilks 5-25-16
 Signature Date

District Response: Approved Denied

Comments:

[redacted] [redacted] [redacted] 5-25-16
 Signature Signature Signature Date

Appendix F
Parent and Student Letters



_____, Superintendent

Dear Parent(s):

As part of our ongoing efforts to improve how we offer computer-based instruction in _____ Schools, we are conducting a research study investigating students' self-determination in a blended learning environment (the _____ Academy) and in the traditional learning environment (your student's homebased school). As well, we are investigating how the blended learning environment is meeting 21st Century Student Outcomes.

If you and your child agree to participate, your child will be asked to complete an online survey that asks him/her questions about his/her attitude while being enrolled in a blended learning class while being enrolled in the homebased school class concurrently. The survey will take approximately 20 – 25 minutes and will be administered starting on the third day of the summer session for the _____ Academy.

Participation in this research study is completely voluntary, and there is no penalty or reward if your child decides not to participate, or you do not wish to give your consent for his/her participation. However, the information your child shares will help us improve services and support to all students who are involved in blended learning classes and other computer-based instruction in the future. If you choose to participate, we extend to you and your child our deepest gratitude for your participation in this research study.

In order to include your student's responses as part of this research study, we need your permission. Attached is the Informed Consent Document which gives you more information about the research procedures and how the information will be used. After you have reviewed the form, please check the box "I consent" or "I do not consent" and sign your name at the bottom of the page. Your student will need to read the enclosed letter for him/her. After the Informed Consent Form is completed, we ask that your student return it to the school counselor indicated on the form. If your student is a senior, there is an enclosed self-address envelope to mail the consent form back.

Thanks for your consideration



██████████, Superintendent

Dear Student:

You have received this letter because you were enrolled in a course at the ██████████ Academy during the Spring 2016 semester. As well, you were enrolled in classes at one of the district's three high schools. You have the opportunity to take part in a research study to help gather information from high school students concerning your attitudes about a blended learning environments, such as the ██████████ Academy, a traditional learning environment, such as your homebased school, time and goal management, working independently and being a self-directed learner. There is an increased use of technology in schools across the district, the state and the nation. This research investigation hopes to provide high school students' perspective about these initiatives to help with ongoing improvements in this area.

The research study will involve you volunteering to complete a 20-25-minute online survey on one of the days from June 8 to June 16 at the ██████████ Academy. The survey will not ask you to identify yourself, your homebased school, your teachers' names or the courses you are taking at either location. Your grades will not be impacted if you do or do not participate in the research study. By participating, you will have an opportunity to provide your opinion in the areas described above. In doing so, you can help others better understand and serve high school students in your district, around the state and perhaps around the nation.

I hope you will take time to discuss this opportunity with your parent and truly consider participating in this research study. Please read and complete the enclosed Informed Consent Document, and return it to the school counselor at your school or mail it in if you are a senior. Your opinion and knowledge matter.

Best regards and thank you for your consideration

Appendix G
Informed Consent Document

For the Study: Self-Determination and 21st Century Student Outcomes are investigated in a Blended Learning Program

Purpose

There is an increased use of technology in schools across the district, the state and the nation. This research investigation hopes to provide high school students' perspective about these initiatives to help with continuing improvements in implementation and sustained use of technology in high schools.

RESEARCH PROCEDURES

This research project is designed to investigate the differences three basic elements of Self-Determination Theory identified through research as Autonomy, Competence and Relatedness in a blended learning environment as compared to a traditional learning environment. As well, this research investigation will seek to find out how students in a blended learning environment feel about the 21st Century Student Outcomes of Initiative and Self-Direction. If you agree to allow your student to participate in the online survey on one of the six days of the study, your child will be asked about a favorite blended learning class at [REDACTED] Academy and their favorite class in the traditional learning environment at their homebased school. At no time will your child be asked to identify himself/herself in this research project or his/her homebased school. Neither will your child be asked to identify the course name or teacher's name associated with the questions asked in the survey.

RISKS

There are no foreseeable risks for participating in this research study.

BENEFITS

There are no direct benefits or consequences to your child for participating or not participating in this study other than to help further research in blended learning environments and help the district improve its blended learning and computer-based instruction opportunities for students.

CONFIDENTIALITY

The data in this study will be kept confidential. Only the researchers will have access to the data collected. Your child's name will not be included on any of the survey responses. While it is understood that no computer transmission can be perfectly secure, reasonable efforts will be made to protect the confidentiality of all transmissions.

PARTICIPATION

Your child's participation is voluntary, and he/she may withdraw from this study at any time and for any reason. If he/she decides not to participate or if he/she withdraws from the study, there is no penalty. There are no costs to you, your child or any other party.

CONTACT

This research is being conducted by [REDACTED] Schools and for a doctoral dissertation by V. Keith Wilks (vwilks@rhmail.org) at Gardner-Webb University. You may contact V. Keith Wilks, Executive Director of Student Services at 981-1041 or Dr. Thomasina Odom at Gardner-Webb University at todom1@gardner-webb.edu if you have questions or comments regarding your rights as a participant in this research. This research has been reviewed according to Gardner-Webb University procedures governing your participation.

There are two copies of this Informed Consent Document for participation. Please complete and return one copy to Ms. [REDACTED] at [REDACTED] High, Ms. [REDACTED] at [REDACTED], Ms.

_____ at _____ or Ms. _____ at the _____ and keep a copy for your records. If you are a 2016 graduate, you can mail a copy in the self-address envelope enclosed by June 4, and email your confirmation with your name to _____s@yahoo.com. If you do not mail the Informed Consent Document, seniors, you must bring it to the Phoenix Academy to be allowed to participate. No one will be allowed to participate without a complete form. For all other survey administrations, please provide a signed copy of this consent to the research.

CONSENT: Please initial beside one of the statements below.

_____ I have read the Informed Consent Document and agree to allow my child to participate in the study

_____ I have read the Informed Consent Document and DO NOT agree to allow my child to participate in the study

Parent, your signature below confirms the response initialed above represents your wishes on participation in this study.

Student, your signature below confirms your willingness to participate in this research study which will not impact you in any way other than to provide information to help improve educational opportunities in your school district.

Student's Name Printed

Parent's Name Printed

Student's Signature

Date

Parent's Signature

Date

Survey Date and Times

Initial the one date you will participate in the survey at the _____ Academy. If you are not able to attend on the date you indicate below, please email me at ywilks@rhmail.org to reschedule the date you will attend.

_____ 9 am to 11 am—**June 8, 2016**

_____ 9 am to 11 am—**June 9, 2016**

_____ 9 am to 11 am—**June 13, 2016**

_____ 9 am to 11 am—**June 14, 2016**

_____ 9 am to 11 am—**June 15, 2016**

_____ 9 am to 11 am—**June 16, 2016**

_____ 9 am to 11 am—**July 8, 2016**

_____ 9 am to 11 am—**July 10, 2016**

_____ 9 am to 11 am—**July 11, 2016**

_____ 9 am to 11 am—**July 12, 2016**

_____ 9 am to 11 am—**July 13, 2016**

_____ 9 am to 11 am—**July 14, 2016**