INTRINSIC MOTIVATION IN A BLENDED LEARNING ENVIRONMENT: AN EXPLORATORY STUDY

By

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ABSTRACT

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It is estimated that 75% of all K-12 schools in the United States incorporate some form of e-learning within their instructional program offerings (Watson, Pape, Murin, Gemin, & Vashaw, 2014). However, current research relating to the success of virtual learners is providing mixed results at best, with virtual course completion rates hovering around 58% (Freidhoff, 2017) and attrition rates as high as 80% in some e-learning courses (Bawa, 2016; Bonk, 2001; Moshinskie, 2001).

The purpose of this study was to understand the degree to which students who were new to a blended learning program were motivated toward tasks aimed at developing 1) a sense of community; 2) e-skills, 3) self-regulation, and 4) goal-setting; and to examine whether motivation in these domains is predictive of continued enrollment, progressing in school and academic engagement during their first semester in the program.

This study provided an intimate window through which to view students' sociodemographic characteristics, motivations and outcomes in this cyber school blended learning model, with key findings related to sociodemographic background and motivational characteristic variables statistically significant to important education outcomes.

This dissertation and the degree it represents is dedicated to my brilliant and loving husband, Philip Zeller, our ever-happy daughter, Amanda Zeller, our kind-hearted son, Xavier Zeller, and my always encouraging and supportive parents Marco and Linda Zea.
Thank you for always believing in me.

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CHAPTER 1

Introduction

It is estimated that 75% of all K-12 schools in the United States incorporate some form of e-learning within their instructional program offerings (Watson et al., 2014). However, current research relating to the success of virtual learners is providing mixed results at best, with virtual course completion rates hovering around 58% (Freidhoff, 2017) and attrition rates as high as 80% in some e-learning courses (Bawa, 2016; Bonk, 2001; Moshinskie, 2001). Within the current educational landscape, a growing number of schools are utilizing e-learning, pushing e-learning components into traditional classroom settings and adding face-to-face components to online programs (Miltiadou & Savenye, 2003) blurring the lines between traditional and online learning contexts. It is difficult to determine if blended learning environments are really more successfully than strictly online learning environments at addressing the issue of attrition, because many of the statistics reported on attrition in online environments represent an aggregation of different virtual environments, including blended learning. Still, blended learning is seen by many as an instructional model that can combine the best of both [online and traditional] worlds (Bonk & Graham, 2006; Moskal, Dziuban, & Hartman, 2013) by combining face-to-face and e-learning into one cohesive instructional model. Blended learning is emerging as a significant force in educational contexts with an estimated 20% of all students (approximately 9 million) engaged in some type of blended learning.

Research has begun to focus on identifying characteristics or traits of students who are more successful in completing e-learning coursework in these varied learning contexts. A review of literature relevant to a variety of learning environments suggests that four characteristics may be particularly relevant to student success in blended learning contexts. The four identified

characteristics are: 1) a sense of community (Garrison & Kanuka, 2004; Rovai, 2002; Rovai & Jordan, 2004; Sadera, Robertson, Song, & Midon, 2009; YIlmaz, 2016), 2) e-skills (Hughes, 2007; Song, Singleton, Hill, & Koh, 2004; Tate & Warschauer, 2017), 3) self-regulation (Delen & Liew, 2016; Kintu & Zhu, 2016; Ko, 2013; Lynch, 2003; Lynch & Dembo, 2004; Santhanam, Sasidharan, & Webster, 2008), and 4) goal-setting (Barnard, Lan, To, Paton, & Lai, 2009; Delen & Liew, 2016; Nebel, Schneider, Schledjewski, & Rey, 2017; Roblyer & Marshall, 2003; Tanglang & Ibrahim, 2015).

Recognizing that these and other characteristics are especially important to student success in blended learning environments, some schools are working to support students by creating induction and intervention programs to help them foster the characteristics needed to be successful in these learning environments. While such intervention activities may make students aware of the importance of these characteristics and may even help students develop skills related to these characteristics, this awareness may not get students very far unless they are motivated to use or develop these characteristics in their new program. As an example, a student might learn that it is important to set goals, but this won't help him/her if he/she is not motivated to employ this practice in his/her course of study.

"It is generally acknowledged in most fields of learning that motivation is essential to success: the learner has to want to do something to succeed at it" (Daugėlaitė, Jankauskaitė, & Sabaliauskienė, 2012). As practitioners, we all have observations, anecdotes and stories of students who clearly have the skills to do the work they need to do to be successful yet fail because they lack the motivation to engage these skills. These observations of practitioners are echoed in the work of giants in the field, such as Ryan & Deci (2000, p. 54) with the idea that "To be motivated means to be moved to do something" and thus regardless of a student's

abilities, a student unmotivated "feels no impetus or inspiration to act." In addition to identifying and developing concrete skills or characteristics students need to be successful in online and blended learning environments, it is also imperative that we understand students' intrinsic motivation related to these characteristics. According to Deci & Ryan (2009, p. 56) "intrinsic motivation exists in the relation between individuals and activities. People are intrinsically motivated for some activities and not others, and not everyone is intrinsically motivated for any particular task."

Students enter online and blended learning environments with varying skill sets and with different motivational orientations toward using and developing each of those characteristics. It is possible for a student to be highly motivated with regard to one of the four characteristics but not others (e.g., a student might be highly motivated to use technology but might not have any impetus for setting goals). It is important to understand the degree to which students are motivated toward characteristics presumed to be predictive of student success, and to determine the relative relationship of each characteristic to student success.

Because of the affordances and challenges typically inherent in blended learning environments, it may be particularly important to understand student motivation. In blended and other e-learning environments, students are more frequently away from the physical presence of their teachers which may often translate into a perception of reduced support, guidance, redirection and encouragement. As a result of these inherent challenges of blended and e-learning, students need to be more intrinsically motivated to engage the skills and characteristics that will support their success. We know that in traditional academic settings, intrinsically motivated learners seek learning for its own sake (Leng, Ali, Baki, & Mahmud, 2010; Schweinle, Turner, Dame, & Meyer, 2006), which facilitates the learning process on a longer term

(Vansteenkiste, Simons, Sheldon, & Deci, 2004), taking learners beyond the specific time they are with their teachers. Thus, intrinsic motivation seems of critical importance in blended learning environments. Several scholars have suggested that motivation may play an important role in the high rates of attrition for online learning (Hartnett, George, & Dron, 2011; Hodges, 2004; Muilenburg, & Berge, 2005), but there is little research exploring whether motivation at program entry is predictive of student success.

Early identification of students who may struggle in blended learning environments would allow educators to put appropriate interventions in place to support students. Knowing students' motivational orientation toward these four characteristics may allow teachers to be better prepared to support students in blended learning environments and to better utilize the limited face-to-face time they have with their students. Ultimately, if motivation toward these four characteristics is related to student success, motivation inventories could be used to identify students who are already well suited to this type of learning as well as students who might need additional supports to be successful.

Purpose of the Study

The purpose of this study was to understand the degree to which students who were new to a blended learning program were motivated toward tasks aimed at developing 1) a sense of community; 2) e-skills, 3) self-regulation, and 4) goal-setting; and to examine whether motivation in these domains is predictive of continued enrollment at the end of first semester, progressing in school and academic engagement during their first semester in the program.

CHAPTER 2

Literature Review

The current research on blended learning lacks sufficient dimension for us, practitioners or researchers alike, to make well informed decisions regarding the implementation of blended learning in the K-12 environment. While it is not possible within one study to examine all aspects of blended learning, this literature review and subsequent study aim to connect several anchor constructs. The review of literature begins with the current landscape of blended learning. Second, because blended learning is relatively new to K-12 education, literature related to traditional and e-learning context is also reviewed to describe four student characteristics (a sense of community, e-skills, self-regulation, and goal-setting) that are believed to positively connect with three important educational outcomes (continued enrollment at the end of first semester, progression toward graduation and academic engagement). And finally, in order for us to better understand how to support learners entering a blended learning environment, we need to understand how the learners' motivation toward engaging in characteristics thought to contribute to success in a blended learning environment, relate to their actual success in that environment.

Blended Learning: Definitions, Potential Benefits, and Challenges

There is a growing trend, known as blended learning, that combines brick and mortar components with online learning options. A solid, agreed upon definition of blended learning, however is still up for debate (Picciano, 2014). Some scholars see a tight definition as a constraint and appreciate the lack thereof, viewing it as an opportunity for practitioners to think broadly about the potential of blended learning and mold it to their needs and the needs of their students. Others consider the lack of definition as a weakness and seek a definition as a means

of a constraint, with the intent of identifying the most viable models of blended learning (Alammary, Sheard, & Carbone, 2015; Oliver & Trigwell, 2005).

For the purposes of this study, the most widely held definition of blended learning, that of Christensen, Horn, & Staker (2013), will be used. Blended learning is defined as: "a formal education program in which a student learns at least in part through online learning 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. The modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience." (Christensen et al., 2013; Powell et al., 2015)

While the use of blended learning in K-12 school settings is still relatively new, the pull is immense. Districts, schools and even teachers are drawn to blended learning arrangements, as they seek options to alleviate strained budgets, personalize learning and increase student outcomes. Blended learning is seen as an enabler of student centered learning (Horn & Staker, 2015).

It is clear that blended learning provides benefits for school districts and researchers have demonstrated positive findings to support the effects of blended learning for students, including increased course satisfaction (Tseng & Walsh, 2016), retention (López-Pérez, Pérez-López, & Rodríguez-Ariza, 2011; P. Rovai & R. Downey, 2010), academic success (López-Pérez et al., 2011; Melton, Bland, & Chopak-foss, 2009; Tseng & Walsh, 2016) and academic engagement (López-Pérez et al., 2011) than in traditional face to face courses.

Despite the potential benefits of blended learning for students and school districts, significant challenges remain with e-learning course completion rates hovering around 60%. While retention rates specifically for blended learning are difficult to obtain, the school in which

the present study was conducted had an attrition rate for the 2014/15 and 2015/16 school years of 29% and 27% respectively.

Indicators of Student Success in Blended Learning Environments

Given the high attrition rates of e-learning programs, program retention is an essential indicator of success in a blended learning program (Berge & Huang, 2004; Hughes, 2007). Other key indicators include course satisfaction (Tseng & Walsh, 2016), academic success (López-Pérez et al., 2011; Melton et al., 2009; Tseng & Walsh, 2016), academic engagement (López-Pérez et al., 2011) and motivation (Kintu & Zhu, 2016; Kintu, Zhu, & Kagambe, 2017; Sucaromana, 2013; Tseng & Walsh, 2016). This study will focus on continued enrollment in the program, academic success and academic engagement. Continued enrollment was selected, as it is foundational to success in any learning environment, particularly given currently reported attrition rates. Academic success, as indicated by academic credit accumulation was selected as it is a common topic of educator inquiry and focus and schools are often graded, themselves, on student academic success. Academic engagement was selected as it is an identified program element of this school.

Student Characteristics that May be Important to Success in Blended Environments

Through a review of literature related to blended learning, several characteristics emerge as important to student outcomes. As blended learning is relatively new to the educational landscape, additional literature was reviewed relative to these characteristics in other learning environments. While these four characteristics do not represent an exhaustive list of characteristics important to student success in blended learning environments, these four characteristics were selected as they appeared frequently within the literature.

Sense of Community

A sense of community in school and classroom generally refers to members feeling a sense of belonging and fit to one another. Members generally have duties and obligations to themselves, to each other and to the school. Additionally, members who feel a sense of community in a learning environment have a shared expectation that their educational and learning needs will be met through a commitment to shared goals (Kim, Solomon, & Roberts, 1995; Morgan & Tam, 1999; Rovai, 2001) within the context of an educational setting that is focused on learning.

Through a review of relevant research, it seems to be a common assumption that a *sense of community* in schools and classrooms provides a positive association for all students (Solomon, Battistich, Kim, & Watson, 1997). When students feel a sense of belonging or connection to the learning community, they more fully participate in that community, increasing the flow of information among learners, support and commitment to group goals (Dede, 1996; Rovai, 2002; YIlmaz, 2016). In traditional learning environments, greater academic effort and better academic performance are all associated with a positive sense of community (Battistich, Solomon, Watson, & Schaps, 1994). Similar results have been found in studies of online learners, where a sense of community is associated with more positive attitudes, and engagement in the course (Rovai, 2002; YIlmaz, 2016).

Sadera Robertson & Mildon (2009 p. 282) demonstrated "that a positive relationship exists between students' sense of community and their learning success in online courses." While Liu, Magjuka, Bonk, and Lee (2007 p.9) found "a positive relationship between sense of learning community and perceived learning engagement, course satisfaction, and learning outcomes." Conversely, a low sense of community has been associated with attrition, students

failing to complete courses, a sense of isolation and poor achievement (McCarthy, Pretty, & Catano, 1990; Morgan & Tam, 1999; Rovai & Jordan, 2004; Sadera et al., 2009; Tinto, 1975). Mcinnerney and Roberts (2004) assert that although the potential for a greater sense of isolation in online and blended courses could mean the difference between a successful and an unsuccessful online learning environment for many students, this issue is often ignored by many educators. According to self-determination theory (Deci & Ryan, 2000) the need to belong is a basic human need. Because online and blended learning environment have less face to face interaction and require a lot more independence on the part of learners, meeting this basic need may be especially challenging because it may require a good deal more investment from students themselves.

E-skills

As use of technology in education and related research has evolved, so too has the refinement of terms used to describe technology skills needed for learning.

In the current study, the term "e-skills" will be used to refer to a broad range of technology skills necessary to complete learning related activities, that include concepts such as technology skills, Information Communication Technology ICT, Learning ICT, and digital literacy skills. *ICT skills* refers most basically, to *Information & Communication Technologies* skills. *Learning ICT skills*, and *e-skills* take the idea a step further, by including a learner's proficiency for using ICT specifically in a learning context (Draffan & Rainger, 2006). Whereas, *digital literacy* refers to a student's *"*ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (Visser, 2012, p.2). For the purpose of this review all of these terms are considered e-skills.

There is a general acceptance and belief, throughout the literature, that *e-skills* are important for students who enter online and blended learning environments. Many believe that, students' proficiency for using *e-skills* is as important as their attitudes. (Draffan & Rainger, 2006). Further, there is a general belief that today's students are *digital natives* (King, Miller, & Bayerl, 2017). This term was originally identified by Prensky (2001, p.1), referring to today's students as "native speakers of the digital language of computers, video games and the Internet". Yet studies like those of Kennedy, Judd, Churchward, and Gray (2008) sought to address the question of students being truly digital natives. The study showed that although the majority of students had access to many technological devices, they lacked the ability to use the devices for educational or work-related purposes. A lack of *e-skills* is often cited as a main reason students express frustration with and may eventually drop out of blended and e-learning courses and programs (Fyfe, 2000; Hughes, 2007; Lien, 2015). Tate and Warschauer (2017) take this idea further, by expanding the term "digital divide" to push beyond that of access to technology and to include possession of *relevant [e-] skills.* The lack of technological competency is quickly becoming a major barrier in education (Hoar, 2014).

Self-Regulated Learning

Zimmerman (2002) describes self-regulation as "the self-directive process by which learners transform their mental abilities into academic skills" (p. 65). A self-regulated learner is described by Zimmerman (1990) as one who plans, sets goals, organizes, self-monitors, and self-evaluates throughout the learning process. Self-regulation is a predictor of academic achievement across a number of learning environments, including blended learning environments (Delen & Liew, 2016) with self-regulated learners reaching higher academic achievements regardless of their field of study (Santhanam et al., 2008).

Self-regulated learning is not viewed as a characteristic that a student merely has, yet is viewed as something which can be fostered and developed (Ames, 1990; Boekaerts & Corno, 2005; Palincsar & Brown, 1984; Barry J Zimmerman, 1990). There is an ever-growing importance in students developing self-regulated characteristics. As the pendulum swings from a teacher-centered approach to teaching and learning, to a student-centered approach, there is a greater need for students to become more self-directed, as students are expected to be more directive in their learning. The nature of blended and e-learning takes this a step farther, as students are away from the direction of their teachers for extended periods of time, thus making self-regulated learning crucial for students in online and blended learning environments (Delen & Liew, 2016; Lynch & Dembo, 2004).

Goal Setting

In its most basic form, "A goal is the object or aim of an action" (Locke & Latham, 2002. p.705). In an educational context, goal setting is the process of establishing clear and usable targets for learning (Moeller, Theiler, & Wu, 2012). Latham & Locke (1991) established that setting goals is related to an individual's performance with the premise that, individuals who set specific and more challenging goals experience greater results than those who set vague and/or easy goals. When considering the components of goals, multiple models exist. Effective goal elements include difficulty, specificity, clarity, and proximity (Bandura & Schunk, 1981; Schunk, 1984; B. J. Zimmerman, Bandura, & Martinez-Pons, 1992).

There is a clear body of research supporting the relationship between goal setting and learning outcomes. Through a meta-analysis of 141 papers related to the effects of goal setting Epton, Currie, & Armitage (2017) support that goal setting has the potential to be considered a fundamental component of successful interventions. Numerous studies have identified links

between goal setting and positive student outcomes including academic achievement and engagement, in traditional (Rowe, Mazzotti, Ingram, & Lee, 2017) and blended (D. Clark, Gill, Prowse, & Rush, 2016; Moeller et al., 2012) learning contexts.

Intrinsic Motivation

Motivation has been identified as a critical factor affecting learning in any educational environment (Chen & Jang, 2010; Lim, 2004) and identified by researchers as a predictor of academic success in traditional classrooms. Miltiadou & Savenye (2003) argue that motivation has been the subject of scholarly inquiry and writing since 5th-century BC Greek philosophers such as Plato and Aristotle. While motivation is a necessary causal factor of learning, it also mediates learning (Wlodkowski, 2008). Simply put, students who are motivated to learn will be more successful in learning than those who are not motivated to learn (Hodges, 2004).

A blended learning environment affords students flexibility and personalization like few other learning models (Horn & Staker, 2015). However, many researchers and practitioners alike believe the flexibility and related benefits of blended learning come with a heavy cost. Students in blended learning environments are more often away from the direct oversight, instruction and guidance of their teachers and thus must be more self-directed, self-determined, and have greater intrinsic motivation to engage in learning and learning activities. Intrinsic motivation relates to the learner having an "interest in learning, a valuing of education and a confidence in their own capacities and attributes" (Deci, Vallerand, Pelletier, & Ryan, 1991). Due to the greater importance of students' self-motivation and self-management in a blended learning environment, it is increasingly important for us to better understand their motivation (So & Brush, 2008; Tseng & Walsh, 2016).

Intrinsic motivation is rooted in self-determination theory (Ryan & Deci, 2000b). According to self-determination theory, with intrinsic motivation, the person participates in the activity, strictly for the enjoyment of the activity, not for any external reward, reinforcement or pressure (Deci & Ryan, 2009). Individuals who participates in a task or activity for the pure enjoyment of it, as a result, easily regulate themselves. "Self-determination means acting with a sense of choice, volition, and commitment, and is based in intrinsic motivation" (Deci & Ryan, 2009).

A literal definition of self-determination theory might say that school activities, particularly in k-12, cannot be intrinsically regulated because students are required to participate in school. However, "self-determination has been associated with a variety of positive performance and affective outcomes in many areas including education" (Deci & Ryan, 2009). Additionally, self-determination theory has been used as the framework for multiple educational studies and more specifically studies related to blended learning (Artino & Stephens, 2009; Noour & Hubbard, 2015; Sun, Xie, & Anderman, 2018; Wilks, 2016).

Intrinsic motivation has been positively linked to several important educational learning outcomes including: retention (Lepper & Cordova, 1992; R J Vallerand & Bissonnette, 1992), academic engagement (Ryan & Deci, 2009; Xiong et al., 2015) and achievement (Gottfried, 1985; Ryan & Deci, 2009), with high attrition rates being identified as a negative indicator of motivation (Carr & Carr, 2000; Clark, 2003). Several researchers have reported learning motivation as the single most important factor predicting students' learning achievement (Goslin, David, 2003; Gottfried, 1985; Lim, 2004; Wlodkowski, 2008). Students who are motivated to learn will have greater success than those who are not (Hodges, 2004). In addition to learning more, intrinsically motivated students are believed to score higher on standardized achievement

tests, persist longer and produce higher quality work (Fredricks et al., 2011; Lazowski & Hulleman, 2016). Low levels of intrinsic motivation have been found to lead to intentions of dropping out and eventual dropout behaviors (Vallerand, Fortier, & Guay, 1997). In a study of 17,359 participants enrolled in a MOOC (Massive Online Open Course) Xiong et al. (2015) found that motivation is significantly predictive of student course engagement. Furthermore, engagement is a strong predictor of retention.

Looking specifically at research related to blended learning and intrinsic motivation, much of the current research looks at intrinsic motivation as an outcome of participation in a blended learning environment rather than a predictor of participation (Kintu & Zhu, 2016; Kintu et al., 2017; Kremenska, 2009; Sucaromana, 2013; Tseng & Walsh, 2016; Wighting, Liu, Rovai, Jing, & Rovai, 2008). In all studies referenced, intrinsic motivation was found to be higher in the blended learning course than in the face-to-face course.

At its core, "motivation concerns the underlying attitudes and goals that give rise to action" (Ryan & Deci, 2000, p54); the "why", along with the attitudes and behaviors related to a particular action. Students who are intrinsically motivated have more interest, excitement, and confidence, which in may translate into enhanced performance (Ryan & Deci, 2000). "Intrinsic motivation results in high-quality learning and creativity" (Ryan & Deci, 2000a). Moreover, intrinsic motivation exists in relation between people and activities or tasks. As such people are intrinsically motivated for some tasks and not others, and not everyone is intrinsically motivated for any one task (Ryan & Deci, 2000a). Likewise, students can be highly motivated toward one goal or task, such as learning and using technology skills, yet not another, such as engaging in activities believed to lead to a greater sense of community. Educators regularly make decisions on what they believe will better support learners to improve outcomes. Understanding students'

motivational orientations toward the activities thought to improve outcomes in blended learning environments and whether those motivational orientations predict success will empower educators to make more informed decisions.

Current Study

Recent position papers related to psychology in education, and more specifically motivation, have called for a greater focus on practice and intervention studies and less with the traditionally strong focus on observational, laboratory based studies. Hullman & Barron (2015) believe that the current "test-theory-first, solve-problems second approach" has advanced theory, yet has served to widen gaps between theory and practice as opposed to solving practical problems of educators. Instead they hold that non-experimental designs have an important role in advancing research. Further, a non-experimental design is often more realistic in real-world, classroom contexts, when manipulating a student's behavior is unrealistic (Harackiewicz & Barron, 2004).

In an effort to support new students who were enrolling in a blended learning program, one school created an induction program with the intent of improving outcomes including: continued enrollment, progressing in school and academic engagement. The teachers of the school identified skills and activities they believed would better support students entering the blended learning environment, building the activities into a four half-day induction program, in which each instructional day was focused on the characteristics previously identified, 1) a sense of community; 2) e-skills, 3) self-regulation, and 4) goal-setting.

Additionally, they identified a need and desire to determine students' intrinsic motivation toward tasks and activities believed to support these four characteristics by administering the Intrinsic Motivation Inventory (IMI) (Ryan & Deci; 2000) at the conclusion of each instructional

day. Much of the current research connecting blended learning and intrinsic motivation focuses on intrinsic motivation as an outcome of participation in a blended learning environment. These teachers wanted to know if intrinsic motivation toward the tasks related to the instructional program, could be a predictor of outcomes in the blended learning program.

Research Questions

The literature reviewed above has informed the following research questions:

1. What is the nature of students' intrinsic motivation toward building a sense of community, e-skills, self-regulation and goal setting in a blended context?
2. What is the degree to which intrinsic motivation toward tasks related to developing **a sense of community** are predictive of: 1) continued enrollment at end of the first semester, 2) credit accumulation towards graduation, and 3) academic engagement?
3. What is the degree to which intrinsic motivation toward tasks related to developing **e-skills** are predictive of: 1) continued enrollment at the end of first semester, 2) credit accumulation towards graduation, and 3) academic engagement?
4. What is the degree to which motivation toward tasks related to developing **self-regulation** are predictive of: 1) continued enrollment at the end of first semester, 2) credit accumulation towards graduation, and 3) academic engagement?
5. What is the degree to which motivation toward tasks related to developing **goal setting** are predictive of: 1) continued enrollment at the end of first semester, 2) credit accumulation towards graduation, and 3) academic engagement?

CHAPTER 3

Method

Setting & Research Design

The setting is a small public school academy, that is designated a Cyber School of Excellence, located in the Midwestern, United States. As a Cyber School of Excellence, the school is allowed to have up to 100% virtual online learning, without a requirement of seat-time. As a public school academy, the catchment area is the entire state. As a result, students from anywhere in the state may choose to participate in this learning option, as an alternative to their resident district school. As a public school academy, as long as the student population is under its cap of 500 students, students within the state simply register to attend the school. The academy was established in 2013, as an alternative option for students in traditional public schools. As of the time of this study, the academy had a population of 200 students, five full-time teachers, 10 part-time virtual mentors, a reading specialist, and a variety of additional supportive services and staff. The school serves students in grade levels 7-12.

The school offers a blended learning program, where students receive the majority of their work through an online learning management system (LMS). The LMS is also used to track and turn in projects and facilitate communication between staff and students. All students are issued an iPad, with which to engage in learning. As part of the instructional program students are expected and encouraged to attend a face-to-face site visit either in person or virtually, a minimum of one time per week. Site visits run for a duration of 3 hours and are offered at various times and locations, throughout each week. During the face-to-face site visits, students have access to work with certified teachers, mentors, participate in project-based learning activities, and participate in tutoring sessions. These site visits are open times for

students to get the support they need and work with teachers, they are not structured as formal traditional classes. Additionally, throughout the week, students have access through virtual means, to connect with teachers and mentors. The school has online tools, such as videoconferencing, to enable students to connect and get support from teachers and mentors when students are not physically present. All students are given an electronic tablet and internet access for use while enrolled in the school.

The instructional model of this cyber school incorporates Competency Based Learning (CBL) and Project Based Learning (PBL), within a blended learning context. Each course credit is divided into six learning modules. Students complete modules in any order and may work on one or more courses at a time. Once a student demonstrates competency in a module, he or she may move ahead. The intent of the model is that students can learn and demonstrate learning in multiple ways and can spend more or less time on content, based on their individual needs.

Students are expected to complete at least one module per week and participate in at least one site visit per week. Following are excerpts of the Active Participation Guidelines (2016) given to all parents and students at enrollment:

> "It is the goal of the academy that all Learners are successful at achieving their personal academic vision. There are two primary variables in ensuring that Learners reach their vision by being an actively participating Learner – Attending weekly Home Site Visits, either physically or virtually, and completing schoolwork each week.
>
> 1. To be an actively participating Learner of the academy, all Learners are expected to attend a Home Site Visit per week. The purpose of a Home Site Visit is to provide academic assistance to each Learner, and to ensure they are academically successful.

2. To be an actively participating Learner of the academy, and in order to graduate on time, each Learner should expect to complete the equivalent of one Module per week."

Prior to fall of 2016, new students participated in one half-day induction session when they enrolled in the school. In an effort to more effectively prepare new students who were enrolling in the blended learning program, in 2016 the school created an extended face-to-face induction program, called JumpStart! with the intent of improving outcomes including: continued enrollment at the end of first semester, progress in school and academic engagement. The teachers of the school identified tasks and activities to support improved student outcomes. Those activities were grouped into cohesive instructional days in the JumpStart! induction program. The instructional days related to the characteristics identified: 1) a sense of community; 2) e-skills, 3) self-regulation, and 4) goal setting. The school staff built a four half-day induction program, in which each instructional day's goal was attributed to tasks and activities believed to support development of one of the four characteristics identified. Each session lasted approximately 3 1/2 hours, for a total of 14.5 hours of face-to-face instruction. Students were expected to participate in all four half-day JumpStart! sessions. Each session was designed by school staff with tasks and activities geared toward helping students foster, learn and utilize one of the four characteristics identified as important for students entering this blended program (see Table 1).

The activities of each day included direct instruction, guided support, independent work, and project-based learning work. Day One, whose focus was building a sense of community, included group activities designed to support feeling a part of the learning community. Day Two, whose focus was on technology related skills included using the iPad, apps such as Google

Drive and Google Docs and the Learning Management system (LMS). Day three whose focus was on activities to promote self-regulation included learning research tools, creating an annual module completion calendar and weekly work schedule. Day four, whose focus was goal setting, included establishing goals toward high school graduation. A detailed agenda of each day can be found in the Appendix. Each session and related activities were taught and facilitated by the certified teacher(s) who worked at the school, based on their respective areas of expertise. At the conclusion of each days' activities, the respective teacher administered and collected the Intrinsic Motivation Inventory (IMI) Task Evaluation Questionnaire (Deci & Ryan, 2010).

Table 1: *JumpStart! Content Organized by Day*

Session	Session Activities	Characteristic Skill Development
Day 1	Relationship Building Getting to know Us	Developing a Sense of Community
Day 2	Learning the iPad Netiquette Setting up email How to navigate the LMS[a] Using Google Drive	Developing E-Skills
Day 3	Career Interest Inventory Time management Building a weekly schedule	Promoting Self-Regulation
Day 4	Setting your vision Creating SMART[b] Goals	Goal-Setting

Notes:
[a] *Learning Management System*
[b] *Specific, Measurable, Attainable, Relevant, Timely*

Participants

Participants included in this study were all students who enrolled in this cyber school blended learning program during Fall 2016 and participated in JumpStart! sessions that were concluded by October 5, 2016. During this 2016 enrollment period, 75 students enrolled and participated in

JumpStart!. Of the 75 students 32 (43%) were male and 43 (57%) were female; 17 (23%) were in middle school and 58 (77%) were in high school; 23 (31%) were determined to be at proficiency level in reading and math; 12 (16%) were eligible for special education services; 49 (65%) were eligible for free and/or reduced lunch; 42 (56%) were of an ethnic minority and 33 (44%) were white. Demographic data is listed in Table 2. All participants self-selected into the blended learning environment through their enrollment in the academy.

Table 2: *Participant Demographic Characteristics*

Students (*N*=75)	% Students
Gender	
Male	43%
Female	57%
Grade Level	
High School (9-12)	77%
Middle School (6-7)	23%
At Grade Level(reading/math)	
At Grade Level	31%
Not at Grade Level	69%
Special Education	
Eligible for Special Education	16%
Not Eligible for Special Education	84%
Free & Reduced Lunch	
Eligible for Free/Reduced Lunch	65%
Not Eligible for Free/Reduced Lunch	35%
Race/Ethnicity	
Ethnic Minority	56%
White	44%

Positionality

The lens through which I view this research study is that of both a researcher and a practitioner.

I work with the school, which is the subject of this study. While I do not directly work with any of the students, I do maintain a supervisory role over the district's Executive Director. The JumpStart! program, also included in the study, was crafted by the teachers and building principal of the school. Based on my role in the school, my oversight of the program was in the development stage and establishing parameters of the program. For example, one parameter was related to the surveys or assessment instruments. If any were to be used, they needed to be established instruments which could be identified as a research tool, be valid and reliable for the intended use. Another parameter for the JumpStart! program was that it needed to be instructionally organized around similar activities for each respective day. This serves multiple purposes, including helps in staffing, as each session is facilitated by a different teacher. Further, the program was to be well documented, such that it could be refined and used in subsequent years. These are all good educational practices. As the lead administrator of the school, I do have a vested interest in the school and student outcomes. As an educator, I have a vested interest in promoting improvement in this and related programming.

Any potential bias to the study would exist in the selection of broad topics covered by JumpStart! or through the selection of the IMI. If this does exist, it would have been indirectly, through work and conversation over the years related to topics of current research and reading. Each JumpStart! session was taught by a teacher employed by the school, I was not in the classroom during the JumpStart! sessions. Additionally, I did not administer any of the instruments, nor was I in the classroom during the time they were administered. All student data used in the study was handled by the appropriate building level staff, during the normal course of their work within the educational process.

In an effort to reduce any potential bias within the study, I have worked to maintain additional distance and separation for activities related to JumpStart! and data collected for the purposes of evaluating JumpStart! and the students.

Data Sources

All data used in this study were collected and used by the academy through the normal course of operation of the school, school assessment and induction practices. Use of referenced data is done so at the approval of the academy Board of Directors. School personnel exported all data, replaced all student names and identifying information with a code system so data points could be connected without revealing students' identity to the researcher. This technique further reduced any potential risk of researcher bias. Data was stored securely, as to protect the transfer and integrity of the data.

The School used an electronic Learning Management System (LMS) to enter, use and store all of its locally collected data. The data used in this study, which was collected by the school staff and stored in the LMS, included student: entry date, exit date, gender, grade level by cohort, eligibility for special education services, supplemental nutrition eligibility, ethnicity, number of credits and attendance. The data elements of entry date, exit date (if applicable), gender, grade level by cohort, eligibility for special education services, supplemental nutrition eligibility and ethnicity were reported at regular collection intervals, to the state's Department of Education. For the purposes of this study, data were collected at the beginning of the school year, at the end of the first semester and at the end of the school year. To determine if students were at their academic grade level upon entering the academy, this study used the results from the Northwest Evaluation Assessment (NWEA) map assessment. The NWEA map assessments

were administered by school staff, using the NWEA map portal. All students used academy issued iPads to take the assessments while at the school building.

The Intrinsic Motivation Inventory (IMI) Task Evaluation Questionnaire (Deci & Ryan, 2010) was administered to students in paper form and collected at the conclusion of each day of JumpStart!, by school staff. The IMI is a self-report instrument with four subscales, designed to assess participants' interest/enjoyment, perceived choice, perceived competence, and pressure/tension, related to a given task. The interest/enjoyment subscale is considered to be the self-report measure of intrinsic motivation and will be used in this study. Additionally, the subscale of perceived competence will be used as a control variable. The IMI is specifically designed to be administered at the conclusion of "task" activities. Upon collecting the completed IMI, the school staff submitted the completed paper IMI to a building level administrator. The building level administrator entered the student responses for each survey into a Google Form.

All data were downloaded from its respective electronic system and put into an Excel format. Student names were replaced with a random number system. The key linking the student names to the numbering system was maintained in paper form, in a secure location within the school, by the school administration. The researcher did not have access to this document. The Excel spreadsheets, stripped of student names, were given electronically to the researcher, using a secure email exchange.

Measures

This section includes a description of all measures used in analyses. Following the description of measures pertaining to the original research questions, are measures that were used as part of post-hoc analyses conducted to better understand and explain the study's findings.

Dependent Variables

Continued Enrollment: Continued enrollment was measured at the end of first semester and at end of year. The variables were coded yes/no based-on existence of an exit date in school records. Data were collected at two data points; at the end of the first semester and at the end of the school year. If the student did not have an exit date in their student record at the respective interval, the student was considered to have continued in the program. Students who exited the program have done so voluntarily. Of the 75 students who enrolled in the program originally, by the end of the first semester 59 students remained enrolled and 16 exited; twelve (12) enrolled in another school within the state, three (3) enrolled in homeschool, and one (1) moved out of state. All analyses in the original study was conducted with both continued enrollment at the end of the first semester and continued enrollment at the end of the first year. In all cases the results were the same. Due to the small sample size and the number of students who exited the program, the continued enrollment at end of first semester dependent variable represents those students who remained in the program for the first semester of the academic year and was used in reported results. In post hoc analysis, however, end of school year value was used.

Progressing in School: Progressing in School is based on total credits earned during the first semester of the academic year of enrollment. The difference between the number of credits a student had at entry into the program and the number of credits the student had at the end of the first semester of the academic year was used as the total credits accumulated (range = 0.00-3.39), and was used as the measure of academic success. Students earn credits (progressing in school) in .01 increments. Credits earned was non-normally distributed, with skewness of 4.71 (SE = 0.31) and kurtosis of 3.02. (SE = 0.61). A square-root transformation procedure was used to normalize the data (Decoster, 2001; Osborne, 1964), and achieved a skewness of .94 (SE = 0.31)

and kurtosis of -0.99 (SE = 0.61). Analyses were conducted using both non-transformed and transformed credits earned variables. Transformation of the credits earned variable did not change the effects of the primary variable of interest, therefore, the original non-transformed credits earned variable was reported throughout the remainder of this study.

Academic Engagement: Students are expected to participate in at least one site visit per week. Site visits are three-hour classroom tutoring sessions which may be attended in person or virtually. The number of site visits attended during the first semester after enrollment (range: 0.00-15.00) were used to determine the attendance rate, to a maximum of one site visit per week, with sixteen (16) as the total possible. This number was used as a measure of academic engagement.

The site visits measure was also non-normally distributed, with skewness of -2.66 (SE = 0.31) and kurtosis of 1.09. (SE = 0.61). A square-root transformation procedure was used (Decoster, 2001; Osborne, 1964). However, once transformed, site visits continued to be non-normally distributed, with an increase in skewness to -4.51 (SE = 0.31) and kurtosis of 1.13 (SE = 0.61). Because the transformation of site visits exacerbated the skewness of the data, the original non-transformed site visits variable was used in analyses.

Independent Variables

The independent variables in this study were intrinsic motivation toward developing a sense of community (IM-community), intrinsic motivation toward developing e-skills (IM-e-skills), intrinsic motivation toward developing self-regulation (IM-SR), and intrinsic motivation toward goal setting (IM-GS) corresponding with each of the four days of JumpStart! intrinsic motivation in each of these domains was measured using the Intrinsic Motivation Inventory (IMI) (Deci & Ryan, 1982).

The IMI is a measurement device intended to assess participants' subjective experience related to a target activity and has been used in several studies related to intrinsic motivation (e.g., Ryan, Connell, & Plant, 1990; Ryan, Koestner & Deci, 1991; Deci, Eghrari, Patrick, & Leone, 1994), and specifically in blended and e-learning environments (Kintu, Zhu & Kagambe, 2017; Kremenska, 2009; Liu, Horton, Olmanson & Toprac, 2011). The IMI instrument has been reported to be reliable and valid (McAuley, Duncan, & Tammen, 1987).

The Intrinsic Motivation Inventory Task Evaluation Questionnaire, developed to assess participants' subjective experience related to tasks used in this study, is a 22-item questionnaire with four subscales, on a seven-point Likert scale. The subscale scores of the IMI can, and have been, used separate from one another and as dependent variables, predictors, or mediators, depending on the research questions being addressed. The interest/enjoyment subscale is considered the self-report measure of intrinsic motivation and as such was the subscale used for the independent predictor variable in this study, based on the research questions being addressed.

A total of 75 students participated in the JumpStart! intervention and are a part of this study. The elements of JumpStart! being evaluated were spread over four consecutive days. The IMI was administered in paper format, to each student present at the conclusion of each day; Day 1 (IM-Community) 92% of participants competed the IMI, Day 2 (IM-e-skills) 85% of participants completed the IMI, Day 3 (IM-SR) 91% of participants completed the IMI, and Day 4 (IM-GS) 95% of participants completed the IMI. In an effort to maintain power of the sample of 75 cases for each independent variable, missing data for each day were imputed using the mean of each respective day.

The IMI results were scored by first reverse scoring items 2, 9, 11, 14, 19, 21. Subscale scores were calculated by averaging the item scores for the items on each subscale. The

Interest/enjoyment subscale was calculated using the following instrument items: 1, 5, 8, 10, 14(R), 17, 20. The Cronbach's alpha values for the 7 item scale were computed for this sample for each of the four days of JumpStart!: Interest/enjoyment (seven items, Day 1 $\alpha = .905$, Day 2 $\alpha = .911$, Day 3 $\alpha = .942$, and Day 4 $\alpha = .926$).

Analyses were run with and without imputed values on all variables. The significance of main effects were the same in both approaches. All results here are based on analyses that included imputed values.

Sociodemographic Characteristic Variables

Demographic variables used in this study include gender, grade level by cohort, at proficiency level in reading and mathematics, special education eligibility, free and/or reduced lunch eligibility, ethnicity, and the IMI subscale perceived competence. Demographic variables were gathered from the schools LMS. *Gender* was coded as male and female, 1 and 0 respectively. For purposes of this study, *grade level* was split into high school (grade 9-12) and middle school (grade 7-8) (1 and 0). Viewing grade level in this way is supported first by the education system in that there is a general distinction between middle school and high school and empirically through a review of the data as there was a notable difference in the mean of students in grades 7 and 8 ($M = 11.06$, $SD = 4.52$), compared to 9-12 ($M = 6.24$, $SD = 5.02$) with respect to the academic engagement outcome variable. To determine if a student is at *academic proficiency in reading and math* this study used proficiency results from the NWEA MAP.

Upon enrolling in the academy, and before participating in JumpStart!, all students took the NWEA MAP Reading and Mathematics assessments. The NWEA MAP is a computer adaptive norm-referenced assessment. NWEA MAP data is said to be useful in identifying students who are entering or progressing through school materially below or above grade level

(NWEA, 2013). The school assessed all students entering the program to determine if they were at proficiency in reading and mathematics. For the purpose of determining at academic proficiency for this study, if the student was at or above proficiency (grade level) in reading and mathematics, they were considered at grade level; if, however, the student was below proficiency in either (or both) reading or mathematics, they were considered to be not at grade level, coded as 1 and 0 respectively. *Special education* status is another variable reviewed in this study. A student was considered to be eligible for special education if the student had an active Individual Educational Plan (IEP) when enrolling in the school, if the student did not have an active IEP plan at the time of enrollment, the student was considered not eligible for special education; coded as 1 and 0 respectively. Use of special education status based on IEP at enrolment may be an imperfect measure, due to the high number of students who were previously from a homeschool learning context. *Free and/or reduced lunch eligibility* was determined by the school, based on the criteria established by the department of education. For purposes of this study, free and/or reduced lunch eligibility was determined based on school data submitted during the first data collection period on October 5, 2016. Students who were eligible for free and/or reduced lunch were coded as 1, with students where were not eligible coded as 0. *Ethnicity* was another demographic variable used in this study. Ethnicity was a self-report measure which students identified at the time of enrollment. Criteria used by the department of education was used to determine ethnicity. Students who selected American Indian or Alaska Native, Asian, African-American or Black, Native Hawaiian or other Pacific Islander, Hispanic or Latino, and multiracial were coded as ethnic minority (1), and students who selected white were coded as white (0). Additionally, the IMI subscale *perceived competence* (IM-PC) was used as a control variable. The *IM-PC* subscale was calculated using the following IMI

instrument items: 4, 7, 12, 16, 22. The Cronbach's alpha values were computed for this sample for each day of JumpStart!: perceived competence (Day 1 $\alpha = .825$, Day 2 $\alpha = .820$, Day 3 $\alpha = .835$, Day 4 $\alpha = .780$).

Sociodemographic Characteristic Variables for Post-Hoc Analysis

The following sociodemographic characteristics were not part of the framework for the and original study. However, due to unexpected findings in the original study, these additional characteristics were collected and used in post-hoc analyses.

Proximity: Student zip code was used to make a visual plot map of participating students.

Urbanicity: Student urbanicity was based on the National Center for Education Statistics (NCES) locale boundaries (Geverdt, 2017) designation for each student's respective resident district. Of the 75 students, 42 (56%) were identified as city, 15 (20%) were identified as suburb, 12 (16%) were identified as town and 6 (8%) were identified as rural. As a point of comparison in urbanicity, the student population of a traditional school would have only one of these designations.

Homeschool Students (20%) were categorized as homeschool, if their most recent prior educational setting was homeschool.

Family History of Incarceration: Students (12%) were categorized as having a family history of incarceration if they or their immediate family members have ever been incarcerated. At Enrollment, each parent/guardian completed an enrollment application. Within the application, parents/guardians were asked if the student or immediate family members have a history of incarceration. This was a self-report measure.

Teen Parent: Students (6.7%) were categorized as a teen parent if they have a child. At enrollment, each parent/guardian completed an enrollment application. Within the application, parents/guardians were asked if the student was a teen parents. This was a self-report measure.

Two Parent/Guardian Household: Students (37%) were listed as living in a two parent/guardian household if they lived with two adults. The information was gathered from information provided in student records.

Homeless within Last Year: Students (20%) were categorized as being homeless within the last year if they either were homeless during the time of the study or had been homeless within the last year. The criteria used to determine homelessness was based on the McKinney-Vento Homeless Education Assistance Improvements Act of 2001(U.S. Department of Education, 2001). At Enrollment, each parent/guardian or student completed an enrollment application. Within the application, parents/guardians and students were asked if they were or had been homeless within the last year. This was a self-report measure.

JumpStart! Session: Students participated in one of two JumpStart! sessions. Session I (46.7%) was held September 6 - 9, Session II (53.3%) was held September 19 – 22. Students were placed into a session on a first-come-first-served basis relative to when they enrolled in the school.

Reason for Attending (avoid/approach): At Enrollment, each parent/guardian completed an enrollment application. Within the application, parents/guardians are asked the reason the student enrolled in this school. Parents/guardians are encouraged to complete this application along with their students. However, since the application is generally complete before students arrive at the school, it is unclear if this response is based the parent/guardian or the students' opinion. Using thematic analysis (Braun & Clarke, 2006), these responses were categorized into

two broad groups; avoid responses (38.7%) and approach responses (61.3%). A reason categorized as approach signifies the student enrolled due to the perception that the blended learning academy had some desirable quality that the student was seeking. A reason categorized as avoid signifies the student enrolled in order to escape something undesirable related to their former educational environment. Once the approach-avoid coding framework was established by the primary researcher, two additional coders coded the responses using the developed framework to check for inter-coder reliability. Of all 75 coded responses, all three coders agreed 95% of the time (71) responses, with only 5% (4) of responses having agreement for two out of three coders. Approach reasons include: looking for more educational opportunities, have friends at the school, and looking for something different. Avoid reasons include: dropped out of another school, bullied at another school, and not happy with prior school.

Analysis

Because of the small sample size, I have been parsimonious in data analysis and built models sparingly. This has resulted in some of the sociodemographic characteristic variables listed above not being included in models if they were deemed unrelated to the outcome variable(s) of interest.

Research Question 1. What is the nature of students' Intrinsic motivation toward building a sense of community, e-skills, self-regulation, and goal setting in a blended context?

This descriptive question was answered through the reporting of means and standard deviations of the intrinsic motivation scores relative to each JumpStart! component. Additionally, correlations between each of the intrinsic motivation scores were calculated. Means comparison and linear regression was used to examine the degree to which intrinsic

motivation, relative to each JumpStart! component, was related to sociodemographic characteristics.

Research Question 2: What is the degree to which intrinsic motivation toward tasks related to developing a sense of community is predictive of continued enrollment at end of first semester, credit accumulation toward graduation and academic engagement.

To answer research question 2, the independent variable was defined as the IM-community as measured by the IMI interest/enjoyment subscale. Sociodemographic characteristic variables gender, grade level, academic proficiency in reading and math, free and/or reduced lunch, and ethnicity were used in the analysis. Additionally, PC-Community as measured by IMI perceived competence subscale was used as a control variable.

Three separate models were used in the analysis. A logistic regression was used to test the degree to which intrinsic motivation toward tasks related to IM-Community were predictive of continued enrollment at end of first semester, since the outcome variable of continued enrollment at end of first semester is a dummy variable. An ordinary least squares (OLS) regression was used to test the degree to which IM-Community was predictive of credit accumulation toward graduation and academic engagement, as both of these outcome variables are continuous variables.

Research Question 3: What is the degree to which intrinsic motivation toward tasks related to developing e-skills is predictive of continued enrollment at end of first semester, credit accumulation toward graduation and academic engagement.

To answer research question 3, the independent variable was defined as the IM-e-skills as measured by the IMI interest/enjoyment subscale. Sociodemographic characteristic variables gender, grade level, academic proficiency in reading and math, free and/or reduced lunch, and

ethnicity were used in the analysis. Additionally, PC-e-skills as measured by IMI perceived competence subscale was used as a control variable in an attempt to isolate the independent variable, IM-e-skills.

Three separate models were used in the analysis. A logistic regression was used to test the degree to which intrinsic motivation toward IM-e-skills was predictive of continued enrollment at end of first semester, since the outcome variable of continued enrollment at the end of first semester is a dummy variable. An ordinary least squares (OLS) regression was used to test the degree to which IM-e-skills was predictive of credit accumulation toward graduation and academic engagement, as both of these outcome variables are continuous variables.

Research Question 4: What is the degree to which motivation toward tasks related to developing self-regulation are predictive of continued enrollment at end of first semester, credit accumulation toward graduation and academic engagement.

To answer research question 4, the independent variable was defined as the IM-SR as measured by the IMI interest/enjoyment subscale. Sociodemographic characteristic variables gender, grade level, academic proficiency in reading and math, free and/or reduced lunch, and ethnicity were used in the analysis. Additionally, PC-SR as measured by IMI perceived competence subscale was used as a control variable in an attempt to isolate the independent variable, IM-SR.

Three separate models were used in the analysis. A logistic regression was used to test the degree to which intrinsic motivation toward IM-SR was predictive of continued enrollment at the end of first semester, since the outcome variable of continued enrollment at end of first semester is a dummy variable. An ordinary least squares (OLS) regression was used to test the

degree to which IM-SR was predictive of credit accumulation toward graduation and academic engagement, as both of these outcome variables are continuous variables.

Research Question 5: What is the degree to which motivation toward tasks related to developing goal setting are predictive of continued enrollment at end of first semester, credit accumulation toward graduation and academic engagement**.**

To answer research question 5, the independent variable was defined as the IM-GS as measured by the IMI interest/enjoyment subscale. Sociodemographic characteristic variables gender, grade level, academic proficiency in reading and math, free and/or reduced lunch, and ethnicity were used in the analysis. Additionally, PC-GS as measured by IMI perceived competence subscale was used as a control variable in an attempt to isolate the independent variable, IM-GS.

Three separate models were used in the analysis. A logistic regression was used to test the degree to which intrinsic motivation toward IM-GS was predictive of continued enrollment at the end of first semester, since the outcome variable of continued enrollment at end of first semester is a dummy variable. An ordinary least squares (OLS) regression was used to test the degree to which IM-GS was predictive of credit accumulation toward graduation and academic engagement, as both of these outcome variables are continuous variables.

Post-Hoc Analysis

In an effort to better understand results of the original research questions, extensive post-hoc analysis was completed.

The post-hoc analysis sought to determine if there was a statistical association between post-hoc sociodemographic variables: urbanicity, reason for attending, JumpStart! session, homeschool, Family history of incarceration, teen parent, two parent/guardian household and

homeless within last year; and outcome variables: continued enrollment at the end of first semester, continued enrollment at the end of the first year, credit accumulation toward graduation and academic engagement**.**

A cross-tab analysis was used to evaluate the association between continued enrollment at end the of first semester sociodemographic variables used in post-hoc analyses. A one-way ANOVA was used to evaluate the association between credit accumulation toward graduation and academic engagement and urbanicity. Independent sample t-tests were used to see if there was a statistical association between credit accumulation toward graduation and academic engagement and any of the variables specified above for post-hoc analysis.

CHAPTER 4

Results

In this chapter, the presentation of results is organized around the study's original research questions. Following the findings pertaining to the original questions are results of extensive post-hoc analyses that were conducted in an attempt to better explain the study's findings.

Research Question 1: What is the nature of students' intrinsic motivation toward building a sense of community, e-skills, self-regulation and goal setting in a blended learning context?

The descriptive information presented in Table 3 indicates that across all four intrinsic motivation measures, sample averages were observed to be just above the midpoint of the scale for intrinsic motivation toward building community ($M_{\text{IM-Community}} = 4.69$, $SD = 1.25$), intrinsic motivation toward developing e-skills ($M_{\text{IM-e-skills}} = 5.00$, $SD = 1.20$; intrinsic motivation toward developing self-regulation ($M_{\text{IM-SR}} = 5.06$, $SD = 1.30$) and intrinsic motivation toward developing goal setting ($M_{\text{IM-GS}} = 5.10$, $SD = 1.34$), with observed values covering nearly the entire scale range.

Not surprisingly, the measures of intrinsic motivation toward the four JumpStart! characteristics were correlated with one another (see Table 3). IM-Community was significantly correlated with IM-e-skills ($r = 0.73$, $p < .001$), IM-SR ($r = 0.57$, $p < .001$), and IM-GS ($r = 0.63$, $p < .001$). Additionally, IM-e-skills was significantly correlated with IM-SR ($r = 0.54$, $p < .001$), and IM-GS ($r = 0.53$, $p < .001$). IM-SR was significantly correlated with IM-GS ($r = 0.66$, $p < .001$).

Table 3: *Intrinsic Motivation Inventory Descriptive Statistics and Correlations*

	1		2		3		4
1. IM - Community							
2. IM – E-Skills	0.73	***					
3. IM – Self Regulation	0.57	***	0.54	***			
4. IM – Goal Setting	0.63	***	0.53	***	0.66	***	
Mean	4.69		5.00		5.06		5.10
SD	1.25		1.20		1.30		1.34
Minimum (observed)	1.00		1.00		1.14		1.14
Maximum (observed)	6.86		7.00		7.00		7.00

*** $p < .001$

Notes: n=75

Multiple regression analysis was used to examine the relationship between students' background characteristics and their intrinsic motivation toward building a sense of community, e-skills, self-regulation and goal-setting at program entry. The purpose of this descriptive analysis was to examine whether certain groups of students enter the program with higher levels of motivation than others. Background characteristics that were considered include gender, grade level, at academic proficiency in reading and math, free and/or reduced lunch eligibility, ethnicity, and perceived competence with respect to building community, e-skills, self-regulation, and goal setting.

Across all models, students' perceived competence in each respective domain was strongly predictive of their intrinsic motivation toward that domain. For example, PC-community was significantly associated with IM-community ($\beta = 0.64$, $p < .001$). Similar associations were identified for PC-e-skills with IM-e-skills ($\beta = 0.83$, $p < .001$), PC-SR and IM-SR ($\beta = 0.83$, $p < .001$) and PC-GS and IM-GS ($\beta = 0.72$, $p < .001$). Significant relationships were also identified between IM-community and special education ($\beta = -0.90$, $p < .01$), IM-e-skills and proficient at grade level in reading and math ($\beta = -0.71$, $p < .001$), and IM-GS and free and/or reduced lunch (($\beta = 0.73$, $p < .05$).

Table 4: *Relationship between Student Background Characteristics and Intrinsic Motivation toward Four Characteristics important for Blended Learning*

	IM - Community		IM – E-Skills		IM – Self Regulation		IM – Goal Setting	
	B	***SE***	***B***	***SE***	***B***	***SE***	***B***	***SE***
Constant	2.20 ***	0.59	1.15	0.58	1.01	0.55	1.08	0.79
Male (vs. Female)	-0.13	0.25	0.09	0.21	-0.39	0.23	-0.16	0.27
High School (vs. M.S.)	-0.08	0.29	-0.15	0.24	0.16	0.26	-0.02	0.32
Reading/Math (At Gd Lvl)	-0.54	0.32	-0.71 *	0.27	-0.16	0.29	-0.54	0.25
Special Education (vs. not)	-0.90 **	0.33	-0.37	0.28	-0.42	0.31	-0.50	0.50
Free/Reduced Lunch (vs. not)	-0.07	0.25	0.11	0.21	-0.18	0.23	0.56 *	0.56
Ethnic Minority (vs. White)	-0.21	0.29	0.15	0.24		0.26	0.26	0.26
PC - Community	0.64 ***	0.11						
PC - E-Skills			0.83 ***	0.10				
PC - Self Regulation					0.83 ***	0.10		
PC – Goal Setting							0.73 ***	0.13
Adjusted R^2	0.37		0.54		0.53		0.35	

**p < .05, ** p < .01, *** p < .001*
Notes: n=75

Research Question 2: What is the degree to which intrinsic motivation toward tasks related to developing a sense of community are predictive of continued enrollment at end of first semester, credit accumulation toward graduation and academic engagement**.**

A logistic regression was performed to examine the association of IM-Community at program entry, and continued enrollment at the end of first semester, controlling on gender, grade level, at proficiency level in reading/math, free and/or reduced lunch, ethnicity, and PC-community (see Table 5).

The Hosmer-Lemeshow test was statistically significant, suggesting it was not a good model fit to the data, $\chi^2(7) = 16.348$, $p = .02$ (Peng, Lee, & Ingersoll, 2010). The model explained

10% (Nagelkerke R^2) of the variance in continued enrollment at end of first semester and correctly classified 78.7% of cases. The regression coefficients were not significant for any of the examined predictors, including IM-community. The model suggests that for every one-unit increase in IM-community students were 1.37 times more likely to be enrolled at the end of first semester, though this association was not statistically significant.

Table 5: *Association between Intrinsic Motivation Toward Developing a Sense of Community and Continued Enrollment at End of First Semester, Controlling on Sociodemographic Characteristics at Program Entry*

	β	***SE* β**	***Wald's* X^2**	***df***	***p***	e^{β} (odds ratio)
Constant	0.24	1.57	0.02	1.00	0.88	1.27
IM - Community	0.32	0.30	1.08	1.00	0.30	1.37
Male (vs. Female)	-0.33	0.64	0.27	1.00	0.61	0.72
High School (vs. M.S.)	-0.53	0.78	0.46	1.00	0.50	0.59
Reading/Math (At Gd Lvl)	1.23	0.86	2.06	1.00	0.15	3.41
Free/Reduced Lunch	-0.59	0.69	0.73	1.00	0.39	0.55
Ethnic Minority (vs. White)	0.53	0.74	0.51	1.00	0.48	1.69
PC-Community	0.00	0.33	0.00	1.00	0.99	1.00

Notes: n=75

Multiple regression analysis was used to test if IM-community significantly predicted progressing in school as indicated by the number of credits earned during the first semester. The predictors in the model explained 17.1% of the variance as indicated by the adjusted R^2 ($F(7,51) = 2.71$, $p < .02$). Students who were eligible for free and/or reduced lunch earned nearly half a credit less during their first semester relative to students who were not eligible ($\beta = -.46$, $p < .05$). While the coefficient for IM-community was positive, it was not statistically significant ($\beta = .12$, $p < .22$).

Multiple regression analysis was used to test if IM-community significantly predicted academic engagement, as indicated by weekly attendance at site visits (see Table 6). The results

of the regression indicated that together the predictors explained 37% of the variance in engagement as indicated by the adjusted R^2 (F (7,51) = 5.94, $p < .001$). Middle school students attended 5.32 more site visits than high school students during the first semester ($\beta = -5.32$, $p < .001$). Unlike other models, academic proficiency in reading and math also predicted academic engagement, with students at academic proficiency attending 2.63 more site visits than those who were below proficiency ($\beta = 2.63$, $p < .05$). Again, the coefficient for intrinsic motivation toward developing a sense of community was positive as expected, but was not statistically significant ($\beta = .48$, $p < .35$).

Table 6: *Association between Intrinsic Motivation Toward Developing a Sense of Community, Progressing in School and Academic Engagement, Controlling on Sociodemographic Characteristics at Program Entry*

	Progressing in School			Academic Engagement		
	B		***SE***	***B***		***SE***
Constant	1.42	**	0.51	14.10	***	2.60
IM - Community	0.12		0.10	0.48		0.52
Male (vs. Female)	-0.09		0.22	0.55		1.12
High School (vs. M.S.)	-0.17		0.25	-5.32	***	1.30
Reading/Math (At Gd Lvl)	0.48		0.25	2.63	*	1.29
Free/Reduced Lunch	-0.46	*	0.23	-1.51		1.15
Ethnic Minority (vs. White)	-0.04		0.25	-1.41		1.30
PC - Community	-0.20		0.11	-0.58		0.57
Adjusted R^2	0.17			0.37		

**p < .05, ** p < .01, *** p < .001*
Notes: n=59 (Participants who did not complete the semester have been removed). Progressing in school is based on the number of credits earned during the 1st semester. Progressing in School [credit] range is 3.39 (with minimum of 0.00 and maximum of 3.39). Students accumulate Progressing in School [credits] in .01 increments. Academic Engagement is based on total weekly attendance at site visits. Academic Engagement [site visit] the observed range was 15 (with minimum of 0 and maximum of 15). Students accumulate Academic Engagement [site visit] up to 1 per week, to a maximum range of 16.

Research Question 3: What is the degree to which intrinsic motivation toward tasks related to developing e-skills are predictive of continued enrollment at the end of first semester, credit accumulation toward graduation and academic engagement**.**

A logistic regression was performed to examine the association of intrinsic motivation toward developing e-skills at program entry and continued enrollment at the end of first semester, controlling on gender, grade level, at proficiency level in reading/math, free and/or reduced lunch, ethnicity, and PC-e-skills (see Table 7).

The Hosmer-Lemeshow test was not statistically significant, suggesting a good model fit to the data, $\chi^2(7) = 7.97$, $p = .34$ (Peng, Lee, & Ingersoll, 2010). The model explained 8% (Nagelkerke R^2) of the variance in continued enrollment at the end of first semester and correctly classified 80% of cases. The regression coefficients were not significant across all the predictors, including IM-e-skills. The model suggests that for every one-unit increase in IM-e-skills students were .87 times as likely to have continued enrollment at end of first semester, though this association was not statistically significant.

Table 7: *Association between Intrinsic Motivation Toward Developing E-skills and Continued Enrollment at End of First Semester, Controlling on Sociodemographic Characteristics at Program Entry*

	β	***SE* β**	***Wald's* X^2**	***df***	***p***	e^{β} (odds ratio)
Constant	0.79	1.74	0.20	1.00	0.65	2.20
IM-e-skills	-0.14	0.38	0.14	1.00	0.71	0.87
Male (vs. Female)	-0.30	0.63	0.23	1.00	0.63	0.74
High School (vs. M.S.)	-0.48	0.78	0.37	1.00	0.54	0.62
Reading/Math (At Gd Lvl)	0.97	0.87	1.25	1.00	0.26	2.63
Free/Reduced Lunch	-0.58	0.69	0.69	1.00	0.41	0.56
Ethnic Minority (vs. White)	0.48	0.72	0.44	1.00	0.51	1.61
PC-e-skills	0.32	0.42	0.58	1.00	0.45	1.38

Notes: n=75

Multiple regression analysis was used to test if IM-e-skills significantly predicted progressing in school as indicated by the number of credits earned during the first semester (see Table 8). The predictors in the model explained 15.3% of the variance as indicated by the

adjusted R^2 (F (7,51) = 2.50, $p < .03$. As in previous models, students who were eligible for free and reduced lunch earned nearly half a credit less during their first semester relative to students who were not eligible ($\beta = -.48$, $p < .04$). While the coefficient for IM-e-skills was negative, it was not statistically significant ($\beta = -.15$, $p < .27$).

Multiple regression analysis was used to test if IM-e-skills significantly predicted academic engagement as indicated by weekly attendance at site visits. The results of the regression indicated that together the predictors explained 38% of the variance in academic engagement as indicated by the adjusted R^2 (F (7,51) = 5.97, $p < .001$). Middle school students attended 5.40 more site visits than high school students during the first semester ($\beta = -5.40$, $p < .001$). Again, the coefficient for IM-e-skills was negative, yet not statistically significant ($\beta = -.67$, $p < .36$).

Table 8: *Association between Intrinsic Motivation Toward Developing E-skills, Progressing in School and Academic Engagement, Controlling on Sociodemographic Characteristics at Program Entry*

	Progressing in School			Academic Engagement		
	B		***SE***	***B***		***SE***
Constant	1.61	**	0.56	12.96	***	2.83
IM – E-Skills	-0.15		0.13	-0.67		0.66
Male (vs. Female)	-0.16		0.22	0.16		1.10
High School (vs. M.S.)	-0.19		0.26	-5.40	***	1.29
Reading/Math (At Gd Lvl)	0.39		0.28	1.96		1.39
Free/Reduced Lunch	-0.48	*	0.23	-1.69		1.15
Ethnic Minority (vs. White)	-0.06		0.26	-1.61		1.29
PC – E-Skills	0.05		0.16	0.91		0.82
Adjusted R^2	0.15			0.38		

**p < .05, ** p < .01, *** p < .001*

Notes: n=59 (Participants who did not complete the program have been removed). Progressing in School is based on the number of credits earned during the 1st Semester. Progressing in School [credit] range is 3.39 (with minimum of 0.00 and maximum of 3.39). Students accumulate Progressing in School [credits] in .01 increments. Academic Engagement is based on total weekly attendance at site visits. Academic Engagement [site visit] range is 15 (with minimum of 0 and maximum of 15). Students accumulate Academic Engagement [site visit] up to 1 per week, to a maximum of 16.

Research Question 4: What is the degree to which motivation toward tasks related to developing **self-regulation** are predictive of continued enrollment at the end of first semester, credit accumulation toward graduation and academic engagement**.**

A logistic regression was performed to examine the association of intrinsic motivation toward developing self-regulation at program entry and continued enrollment at the end of first semester controlling on gender, grade level, at proficiency in reading/math, free and/or reduced lunch, ethnicity, and PC-e-skills (see Table 9).

The Hosmer-Lemeshow test was not statistically significant, suggesting a good model fit to the data, $\chi^2(7) = 5.47$, $p = .60$ (Peng, Lee, & Ingersoll, 2010). The model explained 8.3% (Nagelkerke R^2) of the variance in continued enrollment at the end of first semester and correctly classified 80% of cases. The regression coefficients are not significant for any of the examined predictors, including IM-SR. The model suggests that for every one-unit increase in IM-SR students were 1.98 times more likely to have continued enrollment at the end of first semester, though the association was not statistically significant.

Table 9: *Association between Intrinsic Motivation Toward Developing Self-Regulation and Continued Enrollment at End of First Semester, Controlling on Sociodemographic Characteristics at Program Entry*

	β	***SE* β**	***Wald's* X^2**	***df***	***p***	e^{β} (odds ratio)
Constant	0.64	1.46	0.19	1.00	0.67	1.89
IM – Self-Regulation	0.01	0.35	0.00	1.00	0.99	1.01
Male (vs. Female)	-0.41	6.58	0.39	1.00	0.53	0.66
High School (vs. M.S.)	-0.63	0.78	0.65	1.00	0.42	0.53
Reading/Math (At Gd Lvl)	1.05	0.84	1.58	1.00	0.21	2.87
Free/Reduced Lunch	-0.62	0.70	0.79	1.00	0.37	0.54
Ethnic Minority (vs. White)	0.50	0.72	0.48	1.00	0.49	1.65
PC – Self-Regulation	0.24	0.40	0.35	1.00	0.56	1.27

Notes: n=75

Multiple regression analysis was used to test if IM-SR significantly predicted progressing in school, as indicated by the number of credits earned during the first semester (see Table 10). The predictors in the model explained 12.8% of the variance as indicated by the adjusted R^2 (F (7,51) = 2.22, $p < .05$). Again, as in previous models, students who were eligible for free and/or reduced lunch earned nearly a half credit less during the first semester than students who were not eligible ($\beta = -.48$, $p < .05$). While the coefficient for IM-SR was negative, it was not significant ($\beta = -.01$, $p < .94$).

Multiple regression analysis was used to test if IM-SR significantly predicted academic engagement, as indicated by weekly attendance at site visits. The results of the regression indicated that together the predictors explained 36% of the variance as indicated by the adjusted R^2 (F (7,51) = 5.85, $p < .001$). Middle school students attended 5.35 more site visits than high school students during the first semester ($\beta = -5.35$, $p < .001$). Again, the coefficient IM-SR was positive as expected, but was not statistically significant ($\beta = .13$, $p < .83$).

Table 10: *Association between Intrinsic Motivation Toward Developing Self-Regulation, Progressing in School and Academic Engagement, Controlling on Sociodemographic Characteristics at Program Entry*

	Progressing in School			Academic Engagement		
	B		***SE***	***B***		***SE***
Constant	1.42	**	0.50	13.13	***	2.50
IM-Self-Regulation	-0.01		0.12	0.13		0.58
Male (vs. Female)	-0.15		0.24	0.28		1.22
High School (vs. M.S.)	-0.12		0.26	-5.35	***	1.32
Reading/Math (At Gd Lvl)	0.48		0.26	2.50		1.31
Free/Reduced Lunch	-0.48	*	0.24	-1.57		1.18
Ethnic Minority (vs. White)	-0.06		0.26	-1.57		1.32
PC-Self-Regulation	-0.06		0.14	0.28		0.71
Adjusted R^2	0.13			0.36		

**p < .05, ** p < .01, *** p < .001*

Notes: n=59 (Participants who did not complete the program have been removed). Progressing in School is based on the number of credits earned during the 1st Semester. Progressing in School [credit] range is 3.39 (with minimum of 0.00 and maximum of 3.39). Students accumulate Progressing in School [credits] in .01 increments. Academic Engagement is based on total

weekly attendance at site visits. Academic Engagement [site visit] range is 15 (with minimum of 0 and maximum of 15). Students accumulate Academic Engagement [site visit] up to 1 per week, to a maximum of 16.

Research Question 5: What is the degree to which motivation toward tasks related to developing **goal setting** are predictive of continued enrollment at the end of first semester, credit accumulation toward graduation and academic engagement**.**

A logistic regression was performed to examine the association of intrinsic motivation toward developing goal setting at program entry, and continued enrollment at the end of first semester, controlling on gender, grade level, at proficiency level in reading/math, free and/or reduced lunch, ethnicity, and perceived competence toward developing goal setting (see Table 11).

The Hosmer-Lemeshow test was not statistically significant, suggesting it was a good model fit to the data, $\chi^2(7) = 10.359$, $p = .17$ (Peng, Lee, & Ingersoll, 2010). The model explained 8% (Nagelkerke R^2) of the variance in continued enrollment at the end of first semester and correctly classified 80% of cases. The regression coefficients were not significant for any of the examined predictors, including IM-GS. The model suggests that students were as likely to have continued enrollment at the end of the first semester, with this association not statistically significant.

Table 11: *Association between Intrinsic Motivation Toward Developing Goal Setting and Continued Enrollment at End of First Semester, Controlling on Sociodemographic Characteristics at Program Entry*

	β	***SE* β**	***Wald's* X^2**	***df***	***p***	e^{β} (odds ratio)
Constant	0,45	1.79	0.06	1.00	0.80	1.57
IM – Goal Setting	0.00	0.29	0.00	1.00	1.00	1.00
Male (vs. Female)	-0.31	0.63	0.25	1.00	0.61	0.73
High School (vs. M.S.)	-0.54	0.76	0.50	1.00	0.48	0.58

Table 11 (cont'd)

Reading/Math (At Gd Lvl)	1.06	0.84	1.59	1.00	0.21	2.89
Free/Reduced Lunch	-0.58	0.71	0.66	1.00	0.42	0.56
Ethnic Minority (vs. White)	0.55	0.71	0.61	1.00	0.44	1.74
PC – Goal Setting	0.24	0.36	0.43	1.00	0.51	1.27

Notes: n=59

Multiple regression analysis was used to test if IM-GS significantly predicted progressing in school as indicated by the number of credits earned during the first semester (see Table 12). The predictors in the model explained 14% of the variance as indicated by the adjusted R^2 ($F(7,51) = 2.39$, $p < .03$). As in previous models, students who were eligible for free and/or reduced lunch earned nearly half a credit less during their first semester relative to students who were not eligible ($\beta = -.46$, $p < .05$). The coefficient for IM-GS was negative, yet it was not statistically significant ($\beta = -.04$, $p < .69$).

Multiple regression analysis was used to test if IM-GS significantly predicted academic engagement, as indicated by weekly attendance at site visits. The results of the regression indicated that together the predictors explained 39% of the variance in engagement as indicated by the adjusted R^2 ($F(7,51) = 6.25$, $p < .001$). Middle school students attended 5.46 more site visits than high school students during the first semester ($\beta = -5.46$, $p < .001$). In this case the coefficient for IM-GS was positive as expected, but was not statistically significant ($\beta = .27$, $p < .54$).

Table 12: *Association between Intrinsic Motivation Toward Developing Goal Setting, Progressing in School and Academic Engagement, Controlling on Sociodemographic Characteristics at Program Entry*

	Progressing in School			Academic Engagement		
	B		***SE***	***B***		***SE***
Constant	1.73	**	0.58	10.16	**	2.89
IM – Goal Setting	-0.04		0.09	0.27		0.43

Table 12 (cont'd)

Male (vs. Female)	-0.15		0.22	0.06		1.09
High School (vs. M.S.)	-0.13		0.26	-5.46	***	1.28
Reading/Math (At Gd Lvl)	0.48		0.26	2.53		1.29
Free/Reduced Lunch	-0.46	*	0.23	-1.73		1.14
Ethnic Minority (vs. White)	-0.08		0.26	-1.50		1.27
PC – Goal Setting	-0.09		0.12	0.50		0.58
Adjusted R^2	0.14			0.39		

**p < .05, ** p < .01, *** p < .001*

Notes: n=59 (Participants who did not complete the program have been removed). Progressing in School is based on the number of credits earned during the 1st Semester. Progressing in School [credit] range is 3.39 (with minimum of 0.00 and maximum of 3.39). Students accumulate Progressing in School [credits] in .01 increments. Academic Engagement is based on total weekly attendance at site visits. Academic Engagement [site visit] range is 15 (with minimum of 0 and maximum of 15). Students accumulate Academic Engagement [site visit] up to 1 per week, to a maximum of 16.

Post-Hoc Results

In an effort to better understand the study results, a post hoc analysis was completed to examine the relationship of additional sociodemographic characteristics to the study outcomes of progressing in school, continued enrollment at end of first semester and at end of year, and academic engagement.

Student proximity was evaluated using a mapping tool. Students were categorized by those who continued to end of the first semester and those students who did not, to see if a visual pattern was discernable. A visual pattern was not apparent.

The purpose of the descriptive analysis was to examine whether an association existed between certain groups and their continued enrollment at end of first semester and at end of year. A cross tabulation with a Chi-square analysis was used to examine the relationship between students' post-hoc sociodemographic characteristics at program entry and their continued enrollment at end of first semester and continued enrollment at end of year. Sociodemographic characteristics that were considered included urbanicity, reason for attending the school,

JumpStart! session (there were 2), homeschool, family history of incarceration, teen parent, two parent/guardian household and homeless within last year. A significant relationship was identified between the JumpStart! session the student participated in and continued enrollment at end of first semester, X^2 (1, N = 75) = 6.56, φ = -.30, $p < .01$ and continued enrollment at end of year X^2 (1, N = 75) = 4.50, φ = -.30, $p < .01$. In both models, students who participated in the second JumpStart! session were more likely to have continued enrollment at end of first semester. Additionally, a significant relationship was identified between reason for attending and continued enrollment at end of year (1, N = 75) = 5.07, φ = -.26, $p < .01$. Students with an approach reason for attending were more likely to have continued enrollment at end of year. Students who enrolled in the program because of a quality of the program or school was identified as an approach reason; while a student who enrolled in the program because they were leaving some characteristic or issue of their prior school was identified as an avoid reason.

An ANOVA was used to test if the effect of urbanicity was significant on progressing is school. The ANOVA showed that the effect of urbanicity was significant $F(3,55) = 7.33$, $p = .001$, $\eta_p^2 = .29$. Effect size ($\eta_p^2 = .29$), estimated using partial eta squared, is considered a large effect size (Cohen, 1988). A post hoc analysis completed using the Scheffé post-hoc criterion for significance, indicated that students who lived in the town condition ($M = 1.29$, SD = 1.05), earned significantly more credits than students who lived in the city condition ($M = 0.29$, SD = 0.40).

An ANOVA was also used to test if the effect of urbanicity was significant on academic engagement. The Analysis of variance showed that the effect of urbanicity was significant $F(3,55) = 4.34$, $p = .01$, $\eta_p^2 = .19$. Effect size ($\eta_p^2 = .19$), estimated using partial eta squared, is

considered a medium effect size (Cohen, 1988). However, a post hoc analysis completed using the Scheffé post hoc criterion for significance was not significant.

The purpose of this analysis was to better understand the results of the main study by identifying if there were significant group differences among post-hoc sociodemographic characteristics in progressing in school and academic engagement. A series of independent-samples t-tests were conducted to compare students' sociodemographic characteristics at program entry and progressing in school as indicated by the number of credits earned during the first semester. Sociodemographic characteristics that were considered were reason for attending, JumpStart! session, homeschool, family history of incarceration, teen parent, two parent/guardian household and homeless within last year (see Table 13).

Several significant group differences were identified related to progressing in school, as identified by the number of credits earned within the first semester. In reason for attending, students who enrolled in the program for a reason identified as an avoid condition ($M = 0.41$, $SD = 0.46$) earned nearly half as much credit as those who enrolled in the program for an approach condition ($M = 0.91$, $SD = 0.90$); $t(57) = -2.88$, $p = .01$, $d = 0.70$. Cohen's effect size value ($d = .70$) suggested a moderate to high practical significance, (Cohen, 1988).

Students whose prior school type was homeschool ($M = 1.39$, $SD = 1.11$) earned more than twice as many credits than those whose prior school type was public school ($M = 0.58$, $SD = 0.63$); $t(12.86) = 2.45$, $p = .03$, $d = 0.90$. Cohen's effect size value ($d = .90$) suggested a high practical significance, (Cohen, 1988). Students who were not a teen parent ($M = 0.80$, $SD = 0.82$) earned more than six times as much credit as those who were a teen parent ($M = 0.13$, $SD = 0.23$); $t(17.38) = 4.43$, $p = .001$, $d = 1.12$. Cohen's effect size value ($d = 1.12$) suggested a high practical significance, (Cohen, 1988). Students who live with one (or fewer) parent/guardian in

their household (M = 0.39, SD = 0.52) earned nearly one-third as many credits as students who live in a two-parent/guardian household (M = 1.06, SD = 0.90); t(48.88) = -3.59, p = .001, d = -0.92. Cohen's effect size value (d = -.92) suggested a high practical significance, (Cohen, 1988). Students who were not homeless within the last year (M = 0.86, SD = 0.83) earned nearly five times as many credits as those who were homeless (M = 0.17, SD = 0.32); t(37.07) = 4.43, p = .001, d = 1.10. Cohen's effect size value (d = 1.10) suggested a high practical significance, (Cohen, 1988).

There were also significant group differences identified in relationship to academic engagement, as identified by the number of site visits attended during the first semester and sociodemographic characteristics use din post hoc analyses. Students whose prior school type was homeschool (M = 11.00, SD = 1.81) attended more site visits than that students whose prior school type was public school (M = 8.43, SD = 5.13) t(51.08) = 2.82, p = .01, d = 0.67. Cohen's effect size value (d = .67) suggested a moderate to high practical significance, (Cohen, 1988). Students who were not a teen parent (M = 9.63, SD = 4.32) attended six times as many site visits than those who were a teen parent (M = 1.60, SD = 2.61); t(57) = 4.07, p = .001, d = 2.25. Cohen's effect size value (d = 2.25) suggested a high practical significance, (Cohen, 1988). A student who lived with one parent/guardian in their household (M = 6.00, SD = 5.06) attended almost half as many site visits as those who lived in a two-parent household (M = 11.61, SD = 2.30); t(36.80) = -5.40, p = .001, d = 1.43. Cohen's effect size value (d = 1.43) suggested a high practical significance, (Cohen, 1988). Students who were not homeless within the last year (M = 10.16, SD = 3.73) attended three-times as many site visits as students who were homeless (M = 3.00, SD = 4.92); t(57) = 5.24, p = .001, d = 1.65. Cohen's effect size value (d = 1.65) suggested a high practical significance, (Cohen, 1988).

Table 13: *Relationship between Progressing in School and Academic Engagement, and Sociodemographic Characteristics used in Post-Hoc Analyses*

	Progressing in School				Academic Engagement			
	Mean	***t***		***df***	***Mean***	***t***		***df***
Reason for Attending								
Avoid	0.41	-2.88	**	56.99	8.20	-0.87		57.00
Approach	0.91				9.33			
JumpStart! Session								
Session 2	0.78	0.47		57.00	9.39	0.89		57.00
Session 1	0.68				8.26			
Prior School Type								
Homeschool	1.39	2.45	*	12.86	11.00	2.82	**	51.08
Public School	0.58				8.43			
Family History of Incarceration								
No	0.80	1.47		57.00	9.35	1.67		57.00
Yes	0.35				6.38			
Teen Parent								
No	0.80	4.43	***	17.38	9.63	4.10	***	57.00
Yes	0.13				1.60			
Two Parent/Guardian Household								
No	0.39	-3.59	**	48.88	6.00	-5.40	***	36.80
Yes	1.06				11.61			
Homeless Within Last Year								
No	0.85	4.43	***	37.07	10.16	5.24	***	57.00
Yes	0.17				3.00			

**p < .05, ** p < .01, *** p < .001*

Notes: n=59 (Participants who did not complete the program have been removed). Progressing in School is based on the number of credits earned during the 1st Semester. Progressing in School [credit] range is 3.39 (with minimum of 0.00 and maximum of 3.39). Students accumulate Progressing in School [credits] in .01 increments. Academic Engagement is based on total weekly attendance at site visits. Academic Engagement [site visit] range is 15 (with minimum of 0 and maximum of 15). Students accumulate Academic Engagement [site visit] up to 1 per week, to a maximum of 16.

CHAPTER 5

Discussion

Discussion of Results

The focus of this study was to understand the degree to which students who were new to a cyber school, blended learning program were motivated toward tasks aimed at developing four characteristics which are known to be especially important in online and blended learning environments: 1) a sense of community; 2) e-skills, 3) self-regulation, and 4) goal setting; and to examine whether motivation in these domains was predictive of the important outcomes of *continued enrollment*, *progressing in school* and *academic engagement*.

A significant relationship is evident between student sociodemographic characteristics at program entry and student intrinsic motivation toward tasks aimed at developing three of the 4 identified characteristics. Each of the three identified characteristics is, however, significantly related to a different sociodemographic characteristic. This is an indication that the four days of JumpStart! are independent of one another with the IMI measuring tasks related to each respective day. IM-community was significantly related to special education with special education students having lower IM-community scores by nearly one full point. This could be a result of the particular disabilities of the respective students and/or a result of the negative experiences in their prior school. IM-e-skills however was significantly related to proficient at grade level in reading and math, with students who were not proficient in reading and math showing a lower motivation score. This is somewhat interesting considering many interventions for students who are below grade level in reading and math involve use of technology related interventions (Mcknight et al., 2016; Scalise et al., 2018). IM-GS was related to free and/or reduced lunch with students who were eligible for free and/or reduced lunch having a higher

intrinsic motivation than student who were not eligible for free and reduced lunch. IM-SR was not significantly related to any of the sociodemographic characteristics. These results indicate that each of the measurements (IM-community, IM-e-skills, IM-SR and IM-GS) were measuring something different, as would be expected.

While I have learned about intrinsic motivation related to these four characteristics, none of these appear to be predictive of students' continued enrollment in the program, progressing in school (credits earned) or academic engagement in the program. Null results were found for all main effects of interest, IM-community, IM-e-skills, IM-SR and IM-GS, relative to continued enrollment, progressing in school and academic engagement. While this was not an expectation of the study, null results are also valuable and worth exploration (Franco, Malhotra, & Simonovits, 2014; Mervis, 2014; Oransky & Marcus, 2016; Yirka, 2014). There are a variety of potential reasons for the null findings, including study design and study context related issues.

Design Considerations

In considering potential study design issues several possibilities exist, including the study's use of the Intrinsic Motivation Inventory (IMI). While this study's design, using intrinsic motivation as a predictor of student outcomes is a valid use of the IM measurement instrument ("Intrinsic Motivation Inventory (IMI)," n.d.), much of the work using the instrument has been in more traditional classroom environments (Goslin, David, 2003; Gottfried, 1985; Wlodkowski, 2008). Additionally, much of the published research related to blended learning and intrinsic motivation, looks at intrinsic motivation as an outcome of participation in a blended learning environment rather than a predictor of outcomes (Kintu & Zhu, 2016; Kintu et al., 2017; Kremenska, 2009; Sucaromana, 2013; Tseng & Walsh, 2016; Wighting et al., 2008).

The outcomes included in the study are another potential design consideration. While the identified outcomes of continued enrollment, progressing in school and academic engagement are important educational outcomes, the potential exists that intrinsic motivation toward these four characerisitcs idetified in the study are not predictive of these spesific outcomes identified and may have been predictive of other outcomes. Many of the studies identifying positive relationships between intrinsic motivation and academic achievement are more narowly focused on outcomes in spesific courses or content areas (Denton & Mckinney, 2004; Froiland, Oros, Smith, & Hirchert, 2012; Yukselturk & Bulut, 2007). In considering continued enrollment as an outcome, a large body of research supports a sigficant relationship between low intrinsic motivation and students dropping out of school (Vallerand, Fbrtier, & Guay, 1997), yet in the case of this particular study, we do not know why students exited the program. We only know if the student went to another school in the state, went to homeschool or left the state. The design of this study did not include asking students why they were exiting the program to go to another school, as an example. As such, students may have exited the program because they were in fact motivated yet needed a different learning environment.

Another potential design issue is that the intervention was not laid out as clearly as intended. The study was designed around an existing intervention called JumpStart!, which was designed by school staff as an induction program into the blended learning cyber school. Instruction and related student tasks were spread over four sessions, over four consecutive days. The study design included categorizing the tasks of the four days, then identifying the related characteristic which associated most closely with the tasks. Based on the intervention tasks and organization, the characteristics identified were developing a sense of community, developing e-skills, developing self-regulation and developing goal setting. The potential exists that the

instruction and activities were not in reality, as tightly aligned to the identified characteristics, limiting the ability to really tap into intrinsic motivation toward each of these respective characteristics.

A fourth potential design issue that may have contributed to the null findings may have been the ability of the instrument to measure the IM related to the actual characteristic tasks. While the IMI instrument was used appropriately, at the conclusion of a given task (Deci, Eghrari, Patrick, & Leone, 1994; Ryan & Deci, 2000b), there is a possibility that other contributing factors or "noise" may have influenced the IMI results, such that the tasks themselves were not being measured. The novelty of the days or dynamics of the teachers, as opposed to the actual tasks, may have inflated the IMI scores. As an example, the IMI scores of Day 1 (IM-community) and Day 4 (IM-GS) were observed to be more highly correlated than the IMI scores of Day 4 (IM-GS) and Day 3 (IM-SR), even though goal-setting is an embedded component in self-regulation (Bandura & Schunk, 1981; Schunk, 1984). Some light is shed, when the classroom conditions are considered, separate from the actual content and tasks. Day 1 and Day 4 were both lead by a very upbeat, non-traditional, high energy teacher and were both non-academic days in the traditional sense, with a combination of group and individual activities. In comparison, lower correlations were observed between Day 3 (IM-SR) and all other days of JumpStart!. Day 3 (IM-SR) was led by a much more traditional teacher, and students worked on academic work during their session.

Couple this difference in teachers with the sample size and another potential issue is raised. With a small sample size, one very good or very bad teacher could determine the outcome, beyond the intervention (Slavin & Smith, 2009). Other potential issues related to sample size are such that a sample size of 75 may not have been sufficient to appropriately

represent the nuances of the larger population. The study focused on the nature of the blended learning environment, yet the study school was also a cyber school. As a cyber school, the district boundaries are equal to the state boundaries, causing large variety in the student population which creates two potential issues. First off, the sample may not be representative of a more traditional blended learning student population. Secondly, the potential exists that with the variety of the student population, finding effects with a small sample size was more difficult.

The idea of the variety of the student population brings up an additional design consideration. This study considered the student sociodemographic characteristics as individual variables. Students are not simply male or female, ethnic minority or white, high school or middle school. Using sociodemographic profiles, we might consider an ethnic minority female middle school student separately from an ethnic minority female high school student, as such a study design using a person-centered approach with student sociodemographic profiles (da Silva, de Fátima Nunes, Santos, Queiroz, & Leles, 2012; Rodrigues, 2010) may have been more appropriate.

Also in considering potential design concerns, I did not consider the variety of adult/student relationships as a factor in predicting students' academic success. In addition to teachers, students are also associated with mentors who provide and additional means of connection to the school and support for the students. These relationships may have been a factor in students' success. Future research to look more closely at teacher and related school personnel effects on student success.

Context Considerations

This study focused on the learning context of a blended learning environment, as all study participants were students of a blended learning environment. In designing the study,

literature reviewed and questions focused on intrinsic motivation in this blended learning context. In the retrospect of a completed study, the fact that the school is also a cyber school may have been the more important context to focus on. Sociodemographic characteristics, both in the original study design and in the post hoc analysis point to a uniqueness of the cyber learning context, which may not exist in other learning contexts, including most blended learning environments. One example of this is the urbanicity of the sample. Urbanicity of a school district is based on the National Center of Education Statistics (NCES) locale framework with each school district being associated with a specific urbanicity (city, suburban, town and rural (Geverdt, 2017), by extension the students of each respective district are also associated with that urbanicity. In the case of the school in this study, which is a cyber school, all students urbanicity is based on their resident district. In this case, the study included students with city, suburban, town and rural urbanicity, common of a cyber school based on its state-wide geographic boundaries.

One of the most glaring discoveries during data evaluation was the exit rate, the number of students who enroll and do not continue in the program. Of the 75 students in this study, 17 (21%) did not continue in the program by the end of the first semester; 27 (36%) did not continue in the program by the end of the year. In considering a neighboring local district, the charter authorizer of the study school, as a comparison school; only 64 (5%) of their 7-12 student population of 1272 exited their school during the same school year ("K-12 School Data File," 2017). This demonstrates the study school has relatively high number of students who enter the program and do not complete the semester and school year.

In addition to the lack of significant findings in the main effect, relative to students' continued enrollment at the end of the first semester, none of the initial sociodemographic

variables examined demonstrated a significant relationship. These high numbers of students who exit the school within the first year of enrollment are indicative of cyber schools (Barbour, Miron, & Huerta, 2017). It is imperative that we continue to learn more about the characteristics of students who attend these types of schools and to learn more about why they leave. Additionally, we need to learn more about the characteristics of these types of schools to identify what it is about the schools that do not support the students to remain in the school and be successful.

Discussion of Post-Hoc Results

The original study was based on the premise that intrinsic motivation would predict positive educational outcomes (Deci, 1975; Deci et al., 1991; Hullman & Barron, 2015; Uguroglu & Walberg, 1979). The hypothesized variables (IM-community, IM-e-skills, IM-SR and IM-GS) were not predictive of the outcomes (continuing in school, progression in school or academic engagement) in the way expected. Additionally, none of the sociodemographic background characteristics traditionally associated with educational outcomes (gender, grade level, academic proficiency in reading and math, free and/or reduced lunch, and ethnicity) were predictive of students continuing in school. These null study findings left me with more questions about the student population and what student characteristics do predict success in this unique learning environment.

In an effort to better understand the unexpected results of the main study and research questions, a post hoc analysis was done. The focus of this analysis was to further evaluate participant data and additional available school data, to better understand the sociodemographic and motivational characteristics of the students and the relationship of those characteristics to the

study's identified outcomes of interest continued enrollment, progressing in school and academic engagement.

Through post hoc data evaluation more is learned about the student population, which continues to set it apart from what would be traditionally expected of a 7-12 grade school. A significant relationship was identified between the JumpStart! session (there were 2) the student participated in and continued enrollment at end of first semester. Students who participated in the second JumpStart! session were more likely to have continued enrollment at end of first semester. This too is a surprising finding. The second JumpStart! session started after the traditional start of the school year. One would expect that students who start school after the traditional start to a school year would be less likely to stay in school. Yet, we do not know the reason students exited the program. Those who exited could have done so proactively, because they knew the learning context was not a fit for them.

Additionally, a significant relationship was identified between reason for attending and continued enrollment at end of year. Students with an approach reason for attending were more likely to have continued enrollment at end of year. While intrinsic motivation was not found to be predictive of students' continued enrollment in the program, reason for attending [avoid vs. approach] was found to be significant in continued enrollment at end of year. Reason for attending was also significantly associated with progressing in school, as indicated by the number of credit earned during the first semester. Students in the approach condition earned more than twice as much credit as those in the avoid condition. Students' reasons for making certain educational choices (particularly approach and avoidance orientations), are indicative of one's motivational orientation (Gillet et al., 2017; Pintrich, 1999, 2000; Singh, 2011). While the study's original motivation measures did not seem to capture motivational constructs that were

relevant to students' progress in school, the post hoc findings regarding reasons for attendance are suggestive that motivation plays a role. Students' reasons to attend cyber schools should be examined more closely in future research.

A significant difference between groups was also found for prior school type (homeschool vs. public school), teen parent (no vs. yes), two parent/guardian household (no vs. yes) and homeless within the last year (no vs. yes) for both progressing in school and academic engagement.

The findings of the post-hoc evaluation continue to paint a more detailed picture of the students of this unique learning context, that is a cyber school with a blended learning environment. However, many of the sociodemographic background characteristics examined in the post-hoc evaluation are not made readily available, and in many cases not documented, by traditional districts so direct comparisons are not possible at this time.

Implications

The main purpose of this study was to investigate the relationship between intrinsic motivation and four characteristics believed to be important to student outcomes. Ultimately, if motivation toward the four characteristics were related to student success, motivation inventories could be used to identify students who were already well suited to this type of learning as well as students who might need additional supports to be successful. While the study findings did not support the connection between intrinsic motivation and the study outcomes, there were other findings with potential implications.

The findings of this study support the idea that researchers and educators should focus on why students are choosing cyber schools. The post hoc evaluation indicated that a motivation construct was at play relative to the outcomes of interest. The reason students attended this

school (avoid vs. approach) was significant in two of the three study outcomes being investigated, continued enrollment (at the end of year) and progressing in school (credit earned), supporting the belief that motivation may play an important role in the high rates of attrition for online learning (Hartnett et al., 2011; Hodges, 2004; Muilenburg et al., 2005). This is an important finding, as why a student is enrolling in a particular learning environment is generally not part of a traditional enrollment process. Whether a student's motivation for attending the school is grounded in avoiding a prior school experience or approaching the new environment for its merits seems to be emerging as a construct to be more deeply investigated. Learning more about the motivation behind why students (and parents) select these learning environments could yield valuable information for educators in designing interventions and identifying supports.

Some researchers have additionally connected an avoid / approach motivation construct with the person-centered approach to research (Fong, Acee, & Weinstein, 2016; Jang et al., 2017; S. V. Wormington & Linnenbrink-Garcia, 2017; S. V Wormington, Corpus, & Anderson, 2011). A person-centered approach identifies groups of individuals with shared characteristics or attributes, whereas variable-based approaches consider relative contributions of respective variables. Creating student profiles using a person-centered approach (Lee & Shute, 2010; Schmitt et al., 2007; Yu, Digangi, Jannasch-Pennell, & Kaprolet, 2008) could be a step in the direction of determining the characteristics and attributes of students for whom cyber schools are effective. This knowledge could allow parents and educators to better support students in cyber blended programs.

While not within the scope of the investigation of this study, these findings have shed light on outcomes of cyber schools. Considering the sheer number of students who exit the program within the first semester and first year, one might beg the question of whether or not

cyber schools should exist regardless of the instructional model (blended learning in this case), or online learning at all for that matter. However, the current trends do not support the idea that virtual learning and cyber schools will be going away in the near future. As of 2016, Michigan had nearly 14.000 students enrolled in cyber schools (Barbour et al., 2017), which was increased from approximately 4000 students in 2013. Keeping Pace with K-12 Online Learning (Germin & Pape, 2017) report that as of 2016 over a half million (511,251) students participate in state-lead virtual schools, across 24 states, with the number of both students and schools increasing year after year. These students (and parents) are choosing this form of education over other traditional options. The current trend points to more parents and students choosing this instructional model, not less. What we really need to ask is not "whether or not", instead we need to ask "under what conditions" are students successful and "who" are those students.

We have all heard, or maybe even said ourselves, that cyber schools are for those students who do not fit in traditional education, or for whom the traditional system does not work. The sociodemographic characteristics of the study school seem to support the idea that cyber schools have a unique collection of students. As demonstrated by the sociodemographic characteristics examined, relative to the total population, there seems to be higher percentages of students who are teen parents, previously homeschooled, homeless, and those who are avoiding other educational settings. It is not good enough to categorize students of cyber schools as simply those who do not fit in traditional education. As researchers and educators, we need to investigate further and learn more about students in cyber schools and those who select blended learning models. We need to go beyond whether or not this is a good educational model and investigate for whom and under what circumstances does this model work.

Future Research

In addition to previous suggestions, there are additional considerations for future research. Considering the large body of research in support of the role of intrinsic motivation in positive student outcomes, a larger scale study into the relationship between intrinsic motivation and students entering cyber schools with blended learning models would provide valuable information to educators working with students in these schools. The null findings of this study could have been a result of the small number of cases (75), or other design considerations previously mentioned.

Considering the statistical significance in study outcomes examined (continued enrollment and progressing in school) and the reason (avoid or approach) students enrolled in this educational model, a deeper look at the motivation of students in selecting a cyber school blended learning environment would give valuable insight for both researchers and educators. A longitudinal study of the relationship between why students enter these learning environments and important outcomes could help us learn more about the students who attend cyber schools and how to help them be more successful. Future research in this area should take steps to ensure any instruments used are tapping into the student's reason and resulting motivation in attending the school.

Another recommended research path centers around discovering the attributes of students who are successful in cyber learning environments. Developing profiles of students and using a person-centered (Laursen & Hoff, 2006; Rhodes, 2014) approach to research could advance what we know about students of cyber schools.

Limitations

This study has several identified limitations. The first of the limitations is the sample size. The small sample size of 75 cases dictates parsimonious data analysis. Due to the small sample size data imputation was required to maintain sample size and power. All models were run with and without imputations. Since results were the same in both cases, imputed data was used throughout the study. The small sample size also prevented me from accounting for the nested structure of the data in analyses: I was unable to account for the clustering of students who were assigned to particular teachers or mentors.

The second of the limitations is in using existing data previously collected by the school. Literature reviewed, research questions and subsequent analyses were limited relative to the existing data that was available to the researcher. Using site visit attendance data as an indicator of academic engagement is an additional limitation of this study. Many students must rely on their parents or guardians to provide transportation to site visits. In an effort to reduce the barrier of transportation, the school offers a Zoom virtual classroom, so students can participate in site visits virtually.

The means of measurement of the intrinsic motivation indicators may be considered another limitation of the study, as intrinsic motivation was not measured overtime. The IMI instrument was administered at the conclusion of tasks related to each characteristic; IM-community, IM-e-skills, IM-SR, and IM-GS. While having a measurement of intrinsic motivation at one point in time may be considered a limitation, it was used within the recommended use of the instrument as specifically a task evaluation instrument (Ryan & Deci, 2000b). Further, in this case intrinsic motivation was used as an independent variable, not an outcome. Another limitation related to measurement was the highly correlated IMI scores

among the four characteristics as this could be an indication that the measures did not do a sufficient job of differentiating between the four constructs.

The study's focus on a singular motivation construct – intrinsic motivation – may also be considered a limitation. Motivational processes are complex and multifaceted, and there are multiple theoretical frameworks that are potentially useful in examining the link between students' motivation in blended learning environments and their engagement and success in these environments. For example, other theoretical frameworks that might inform future work in this area include expectancy-value theory (Wigfield & Eccles, 2000), achievement goal theory (Ames, 1992), or attribution theory (Weiner, 1988). Using the frame of expectancy-value theory students' expectations of success and value of tasks might have been considered, relative to subsequent behavior and outcomes. In achievement goal theory, the primary focus is on the extent to which students' academic goals relate to learning and mastery or demonstrating competence by getting good grades or otherwise appearing "smart." Attribution theory focuses students' beliefs about their academic successes and failures as being internal (vs. external), controllable (vs. uncontrollable), and stable (vs. unstable). Additionally, using a profile or person-centered approach to the study design (Corpus & Wormington, 2014; Wormington et al., 2011) could have allowed the possibility of taking into account multiple motivation constructs in one cohesive profile, allowing for a more comprehensive view of motivation. Further, the design of this study did not include a traditional school as a control, such that results could be specifically attributable to this intervention and learning environment. However, Hullman & Barron (2015) support non-experimental research design maintains an important role in advancing research and a non-experimental design if often more realistic in real-world classroom contexts (Harackiewicz & Barron, 2004). Also related to study design, the decision to separately

evaluate goal-setting and self-regulation could be viewed as a design limitation, as goal-setting is a component embedded in self-regulation. That design decision was made based on the design of JumpStart!, the intervention being studied. The JumpStart! intervention was spread over four days with each day's tasks being attributed to one of the four characteristics, and the IMI instrument being administered at the conclusion of each of the four days. In that way, it made sense to keep each of the four characteristics separate and include all four in the study.

Conclusion

Despite the null findings in the main study questions, much was learned about students who selected a cyber school with a blended learning model. Much of the research done to date on such models of education evaluate high level, publicly available data (Barbour et al., 2017; Freidhoff, 2017; K-12 School Data File, 2017) to make general suppositions. This study provided an intimate window through which to view students' sociodemographic characteristics, motivations and outcomes in this cyber school blended learning model.

The study findings related to the relationship of avoid and approach motivational constructs to educational outcomes suggest a deeper look into the motivation of students who chose to enroll in a cyber school may provide valuable insight into the students and a future path of research in cyber schools. Further, the collection of sociodemographic background characteristic variables statistically significant to education outcomes of interest may further our understanding of students who participate in these learning environments, moving us in the direction of creating person-centered approaches to research related to cyber schools and the students who choose them.

APPENDICES

APPENDIX A

JumpStart! Session Agendas

Horseshoe style

Classroom Maintenance	
Attendance	TV with clip of Lego movie
Day 1 Outlines (3)	3X5 cards
Whiteboard/ markers	Happy v. Sad worksheet (30)

For Students	
Name Tags (and extra blank name tags)	3X5 Notecards
Pens/ Pencils (30)	1-2 human helpers
Strategic Partner Handout (30)	Deck of playing cards
Site Visit Handout (30)	IMI Handouts (30)

JumpStart! Session One A

Title: **Welcome to your Happy Life**
Purpose: Create positive first impressions
Familiarize Students with Academy & opportunities

Academy staff: please walk around, introduce yourself, introduce class members to other class members.

1 Welcome.
2 Greeting Activity (Go around and meet others in the room) 3-min Break.
3 "Why I'm excited to be here"; *facilitator goes first, then staff, then Students.*
4 Discuss happiness.
5 Complete 'Happy Life/ Sad Life' worksheet. *Staff to pass out paper/ pens: _____*
6 Share with partner (what you chose and WHY)., Summarize happiness.
7 Discuss what makes Learning fun (If you could have anything in your school, what would you have and WHY). **Capture on board**
8 Discuss how the Academy does all of these things.
9 Luck exercise: Cards! Students pick a card. What did you get? Are you satisfied? Are you happy? What does it take to build a vision of what you want?
10 Break.

JumpStart! Session One B

Title: **Get involved with your mentors, your school, and your community**
Purpose: Familiarize Students with Strategic Partners & Site Visits
Take charge of your academic journey

1 Welcome back!
2 Choices (Example: Coke freestyle machine or toppings on your pizza) *Hand out Strategic Partner list: _____.*
3 Flexibility (Example: DVR t.v. when you want! Balance between school/ work/ hobbies, etc.) *Hand out Site Visit list: _____.*
4 Individualized Learning (Example: Food buffet) You work based off of your interest: variations of modules.
5 Sense of belonging (Eg:Avengers- Different people here that work together to get things done).
6 Positive Environment with Caring People (Example: Disney. Academy staff WANT to be here to help you).
7 Practical (Example: basic needs; eating, water, safety) We only require 19 credits- only what the state requires of you so you can be on your way to your next stepping stone.
8 Anything is Possible (Example: Lego Movie video). Your thoughts matter and your contributions will shape your education, so speak up! Be loud and be heard!
9 Spot Check.
10 Summarize Session 1 (One thing I am excited about after today is___. This is important to me because ____). Share with a partner. Give high fives! ☺ *Staff to pass out 3X5 card: _____*
11 Complete JumpStart! Day 1 IMI Survey (Facilitator will turn in to _____). *Staff to pass out & read instructions:_____*

Day 1

Classroom Maintenance	
Attendance	
Day 2 Outlines (3)	
Whiteboard/ markers	

Horseshoe (with tables) style

For Students	
Name Tags (and extra blank name tags)	1-2 human helpers
Pens/ Pencils (30)	iPads
Usernames/Password List	
IMI Handouts (30)	

JumpStart! Session Two A

Title: **Tools for Success**
Purpose: Learn the technology needed to engage in Academy
Familiarize Students with LMS, email and related technologies

Academy staff: please walk around, introduce yourself, introduce class members to other class members.

1. Welcome back!
2. Greeting Activity (Go around and meet others in the room) 3-min Break.
3. Overview of the day.
4. Talk about why tools are important.
5. iPads basics. *Staff to pass out iPads: _____*
6. Email / LMS Set Up on iPad / Login. *Facilitator writes login convention on board.*
7. Apps Store. Down load apps for iPad set up.
8. Break.

JumpStart! Session Two B

Title: **Basic Apps of Academy**
Purpose: Learn what Apps in context of PBL.

1. Welcome back!
2. All Students log into LMS and open project "What Apps can I use to complete projects and modules at the Academy?"
3. Read through project and outcomes with Students.
4. Supported Learner project time. *Staff walk room, provide support to Students.*
5. Spot Check.
6. Summarize Session 1 (One thing I am excited about after today is___. This is important to me because ____). Share with a partner. Give high fives! ☺ *Staff to pass out 3X5 card: _____*
7. Complete JumpStart! Day 2 IMI Survey (Facilitator will turn in to _____). *Staff to pass out & read instructions:_____*

Classroom Maintenance	
Attendance	Monitor Available
Day 3 Outlines (3)	
Whiteboard/ markers	

Horseshoe (with tables) style

For Students	
Name Tags (and extra blank name tags)	1-2 human helpers
Pens/ Pencils (30)	iPads
Usernames/Password List	Schedule Form (30)
IMI Handouts (30)	

JumpStart! Session Three A

Title: **Plan for Success**
Purpose: Learn educational requirements of college and Career
Students select and research career paths to determine educational requirements

Academy staff: please walk around, introduce yourself, introduce class members to other class members.

1. Welcome back!
2. Greeting Activity (Go around and meet others in the room) 3-min Break.
3. Overview of the day.
4. Introduce Career Exploration project. *Staff to pass out iPads: _____*
5. Supported Student project time. *Staff walk room, provide support to Students.*
6. Summarize Session A (One career I learned about ____). Share with a partner. Give high fives! ☺ *Staff to pass out 3X5 card:*
7. Break.

JumpStart! Session Three B

Title: **Action Plan for Success**
Purpose: Create annual and weekly schedule based on Career and Education.

1. Welcome back!
2. Discussion of Education level needed based on career choices.
3. Create Module Completion Calendar (Annual). *Staff to pass out iPads: _____*
4. Discussion of Weekly Schedule.
5. Create Weekly schedule.
6. Complete JumpStart! Day 3 IMI Survey (Facilitator will turn in to _____). *Staff to pass out & read instructions:_____*

Horseshoe style with tables

Classroom Maintenance	
Attendance	
Day 4 Outlines (3)	3X5 cards
Whiteboard/ markers	Handout of Google Vision Form for Facilitator

For Students	
iPads	3X5 Notecards
Pens/ Pencils (30)	1-2 human helpers ☺
Student Vision Form (Google Form) Send to Students' email	Deck of playing cards

JumpStart! Session Four

Title: **Create your Vision**
Purpose: Create positive first steps
Set Goals for current and future self
Find a Vision that works for me

Academy staff: please walk around, introduce yourself, and introduce class members to other class members.

1 Welcome.
2 Greeting Activity (Get a snack/ water, say hi to a friend/ neighbor) 3-min Break.
3 Pass out iPads *Staff help: _____.*
4 Open Google Form "Student Vision Form". Once opened, close and set on table facedown. *Staff to help, walk around.*
5 Vacation Example (write on board). (1-Where we are going, what we are going to do there. 2- what do we need to do to prepare for this trip?).
6 Relate Vacation to graduation day. Why do we do all of this hard work? To make it to the end goal. To reach destination.
7 Card trick: Students pick card, this time the cards are facing up. Would you rather pick your future blindly or with a vision? Would you rather work for your end goal or take your chances with luck?
8 Close your eyes: Picture your graduation day: WRITE FIRST PARAGRAPH IN GOOGLE FORM
9 Go through form question by question with Facilitator.
10 When Facilitator has checked final question & high fived Student, they may submit the form.
11 Break.
12 Summarize Session 1 (One thing I like about the academy that I can't do at another school is _____. This is important to me because _____.). Share with 3 partners! Give high fives! ☺ *Staff to hand out and collect 3X5 cards: _____.*
13 Complete JumpStart! Day 3 IMI Survey (Facilitator will turn in to _____). *Staff to pass out & read instructions:_____*
14 Remind Students to bring their iPads to their home site which is where we will see them next!

APPENDIX B

Intrinsic Motivation Inventory Instrument

Name: _____ **Day: ___**

As you complete the survey, think of the tasks and activities from today.

For each of the following statements, please indicate how true it is for you, using the following scale:

		1	2	3	4	5	6	7
		Not at all True			Somewhat true			Very True
1	While I was working on Day 1 activities today I was thinking about how much I enjoyed it.	1	2	3	4	5	6	7
2	I did not feel at all nervous about doing the Day 1 activities.	1	2	3	4	5	6	7
3	I felt that it was my choice to do the Day 1 activities.	1	2	3	4	5	6	7
4	I think I am pretty good at the Day 1 activities.	1	2	3	4	5	6	7
5	I found the Day 1 activities very interesting.	1	2	3	4	5	6	7
6	I felt tense while doing the Day 1 activities.	1	2	3	4	5	6	7
7	I think I did pretty well at this activity, compared to other students.	1	2	3	4	5	6	7
8	Doing the Day 1 activities were fun.	1	2	3	4	5	6	7
9	I felt relaxed while doing the Day 1 activities.	1	2	3	4	5	6	7
10	I enjoyed doing the Day 1 activities very much.	1	2	3	4	5	6	7
11	I didn't really have a choice about doing the Day 1 activities.	1	2	3	4	5	6	7
12	I am satisfied with my performance at the Day 1 activities.	1	2	3	4	5	6	7
13	I was anxious while doing the Day 1 activities.	1	2	3	4	5	6	7
14	I thought the Day 1 activities were very boring.	1	2	3	4	5	6	7
15	I felt like I was doing what I wanted to do while I was working on the Day 1 activities.	1	2	3	4	5	6	7
16	I felt pretty skilled at the Day 1 activities.	1	2	3	4	5	6	7
17	I thought the Day 1 activities were very interesting.	1	2	3	4	5	6	7
18	I felt pressured while doing the Day 1 activities.	1	2	3	4	5	6	7
19	I felt like I had to do the Day 1 activities.	1	2	3	4	5	6	7
20	I would describe the Day 1 activities as very enjoyable.	1	2	3	4	5	6	7
21	I did the Day 1 activities because I had no choice.	1	2	3	4	5	6	7
22	After working at the Day 1 activities for awhile, I felt pretty competent.	1	2	3	4	5	6	7

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