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An Examination of High School Student Success In online Learning

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AN EXAMINATION OF HIGH SCHOOL STUDENT SUCCESS IN ONLINE

LEARNING

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ABSTRACT

Online learning education in K-12 districts across the United States has

continually grown in the United States (Barbour & Kennedy, 2014). Research from

online course studies of adult learners suggests several factors influence successful

course completion. However, discrepancies exist as to whether the findings can be

generalized to 9-12 E-learning students. Literature exploring the learner characteristics

associated with successful secondary students in online studies is limited. The research

on online education identifies students who are highly motivated, high-achieving, and

self-starting as those that are most likely to complete online courses successfully

(Barbour & Reeves, 2009). High schools across Ohio employ online learning education

to support graduation pathways of all diverse learners.

This study explored differences that exist between subgroups when learner

characteristics in the online learning environment are compared with course completion

percentage. Archival records of students who had attempted credits towards high school

graduation through online learning coursework were collected from four participating

school districts. The sample for this study was drawn from inner-ring suburban school

districts in Northeast Ohio with an urban boundary. The subjects of this study included

214 high school students, grades 9-12, enrolled in online courses pursuing credits toward

high school completion.

Standard linear regression was calculated to predict course completion percentages based on gender, race, grade level, and grade level according to expected age as the independent variables. The results of this study provided evidence related to online learner characteristics that exist in digital learning environments. Positive results indicate students in upper-grade levels, and female students are more likely to be successful in earning credits in virtual learning environments. The analysis produced favorable outcomes for students who are at grade level to complete online courses successfully. Non-Black students are more likely to complete online courses when compared to Black students based on the findings of this research. The implications of this investigation have practical significance for school districts implementing virtual learning options across the curriculum. It is essential to continue exploring the relationship between individual learner characteristics and course completion for high school E-learners to support online education as a viable instructional pedagogy.

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"The American high school has been characterized as an institution in crisis and

the call for reform has been loud and strong (Picciano, Seaman, Shea & Swan, 2012, p

135)." School districts across the nation are concerned about the decline in the academic

performance of students, especially male students (Jackson & Hilliard, 2013). School

policy remains at the forefront of policymaker's and stakeholder's interests in the high

school sector of education. The American high school is a significant concern for

stakeholders, educators, and families across the United States, mainly due to low

graduation rates. Recently, high schools have begun to make widespread changes to shift

educational practices, policies, spaces, and pedagogy from physical classrooms to virtual

learning spaces to address gaps in learning and graduation rates. Ubiquitous learning

spaces created by web-based technologies eliminate time and space constraints, expand

educational learning opportunities across geographic locations, providing increased

access to education for all students in need, and serve them well (Bettinger & Loeb,

2017). Online learning, as a pedagogical tool, challenges traditional notions of teaching and learning of traditional classrooms.

Increased use of technology in schools sparked this shift in educational practices. In a review of published studies and research on online teaching and learning, Sun & Chen (2016) suggested online education's rapid growth is due to increased Internet connectivity, advances in technological devices, and massive popularity with nontraditional students. Digital technologies are transforming the way we interact, work, play, communicate, and learn. To this end, online learning is a structured learning environment that uses a web-based educational delivery system, where teacher-led instruction is provided synchronously (participants interact at the same time) or asynchronously (participants interact separately at varying times) (Wicks, 2010). Traditional models of high school education are often restricted to classroom spaces, scheduled times, and brick and mortar buildings. Over the past few decades, the broadening use of technology, the popularity of online learning, and high school reform have demanded attention be given to developing strategies toward supporting diverse student populations through the pathway to graduation completion.

High school leaders across the United States are faced with the task of selecting programs that support the individual learning needs of students. New and promising pathways to high school graduation are emerging to increase accessibility, provide equitable opportunities, and to remove barriers that may limit positive interactions in educational settings for various populations of students across the country. Digital programming is often utilized in meeting the needs of every pathway through credit recovery, new credit, or tutorials.

Currently, the State of Ohio Department of Education offers the Class of 2020 multiple pathway options towards earning a diploma. Students must earn 20 course credits in specified subject areas. Then, students must demonstrate what they have learned in one of three ways. Three primary options are provided (Ohio Department of Education, 2018):

1. **Ohio's State Tests:** Earn 18 out 35 points on seven end-of-course state tests.

2. **Industry-recognized credential and score on workforce readiness test:** Earn an industry-recognized credential or a group of credentials totaling 12 points **AND** earn the required score on the WorkKeys test.

3. **College and career readiness tests:** Earn remediation-free scores (scores set by Ohio's university presidents and are subject to change) in math and English language arts on the ACT or SAT.

If students do not meet one of the three pathways, Ohio law provides two additional modified graduation options to earn a high school diploma.

Option 1

Students must take and pass courses that constitute the curriculum requirements and take all seven end-of-course exams. Students are required to retake, at least once, any math or English language arts test, if a score of "1" or "2" is earned. In addition to this requirement, students must meet at least two of the following requirements:

- Earn a GPA of 2.5 on a 4.0 scale in all courses completed during the 11th and 12th grades. Students must complete at least four full-year or equivalent courses in each year;

- Complete a capstone project during grade 12 that meets Ohio Department of Education guidance and evaluation processes;

- Complete a work or community service experience totaling 120 hours, as defined by the Ohio Department of Education and Governor's Office for Workforce Transformation;

- Earn three or more College Credit Plus credits at any time during high school;

- Earn credit for an Advanced Placement (AP), scoring 3 or higher or International Baccalaureate (IB) course, scoring 4 or higher anytime during high school;

- Earn a WorkKeys exam score of 3 on each of the three sections;

- Earn a State Board-approved industry-recognized credential or credentials that equal at least three points;

- Meet OhioMeansJobs Readiness Seal requirements.

Option 2

Students must take and pass courses that constitute the curriculum requirements and take all seven end-of-course exams. Students must finish a career-technical program that includes at least four courses in a single career pathway. In addition to these requirements, students must meet at least one of the following requirements:

- Earn a total score of Proficient or better based on all career-technical exams or test modules;

- Earn an industry-recognized credential or credentials that equal 12 points;

- Complete a workplace experience totaling 250 hours with evidence of positive evaluations.

Proponents of digital learning suggest public schools embrace online learning as a new way of educating students, while opponents fear online learning will further detach students from teachers (Laing, 2010). Some suggest youth are currently seeking to participate in the informal curricula of online programming because the learning tasks are authentic, allow students to construct their knowledge, and it is meaningful to them (Winterwood, 2010). Digital learning, interchangeably referred to as online learning across the literature has permeated the debate on how to best educate all students by offering endless possibilities to access high-quality education (Laing, 2010) or supplemental education. The state of Ohio has undoubtedly embraced online programming and serves as active members and contributors to the online learning community.

Some researchers report online students are more likely to have more complicated lives (Wladis, Conway & Hachey, 2016), and this is undoubtedly true of many students across Ohio's high school landscape. One such concern for Ohio students is the disturbing academic performance of male students. More specifically, Black males, more than any other group, demonstrate the most troubling levels of academic achievement (Jackson & Hilliard, 2013). Historically, African-American males face structural and institutional challenges and have traditionally been viewed as a high-risk population (Rhoden, 2017). The Black male student lags in skill achievement and is more prone to truancy and aggressive behavior (Jackson & Hilliard, 2013). Black males are disproportionately victims of gang fights, violence, poor education, and prison sentencing (Laing, 2010). As these are findings throughout the research for this population, more concerns exist for other diverse learner populations.

Research investigating gender gaps in online educational attainment in higher learning indicates that gender and age gaps are present; however, the findings are complex and contradictory. Literature supports age as a significant contributor when reviewing performance differences between traditional and E-learning students (Schultz, Schultz & Round,2010). A study performed in higher learning online environments reported evidence of gender gaps in the time it takes to complete degree programs and varies by race (McDaniel, DiPrete, Buchmann, & Shwed, 2011). In the same study, McDaniel et al. (2011) reported findings that females in college were most likely to complete college at age 22. However, this age and gender advantage decreased by age 28. Cooper (2006) synthesized research conducted on gender differences in various capacities spanning more than two decades of literature. Cooper reported that the gender divide is an interaction of technological anxiety, gender socialization, and stereotype.

Understanding predictors of success to meet the needs of diverse learners and varied characteristics is the primary concern. Graduation results are directly impacted by the learners who are often at significant risk of not graduating from high school or the scholars often demonstrating poor social behavior and intellectual performance. Just as concerning as providing equitable options for marginalized students, there is an urgent need to provide educational opportunities to expand course offerings for advanced students and perform well amidst economic constraints so that students graduate on time.

Increasingly, schools across the nation are utilizing online learning to bridge the learning, achievement, and opportunity gaps for diverse learners with shrinking budgets. The role of online learning in K-12 public schools has received heightened attention and is viewed as a viable resolution for education-related problems. The social atmosphere of

the traditional high school environment can be overwhelming for students. Online

learning provides an educational model in which the course content is available via the

Internet and allows students to access it at their own pace, anytime, anywhere, increasing

the likelihood of positive academic outcomes and positive interactions.

These rationales, amongst others, have led to the significant growth of secondary

online learning nationally. The US Department of Education (2012) reported in The

Condition of Education, the number of online course enrollments increased from

approximately 300,000 in 2002/2003 to 1.3 million in 2009/2010. Lee, Choi, and Kim

(2013) expressed online learning as the fastest growing area in education in terms of

enrollment and revenue. Bettinger and Loeb (2017) cited that 5.8 million students were

taking online courses in the fall of 2014. Of the 5.8 million students, 2.85 million took

all of their courses online. Per Gemin et al. (2015), in the Keeping Pace report, millions

of students are engaged in some form of online learning activity across the United States

K-12 schools.

The rapid growth of K-12 online education has been attributed to many more

factors. As the landscape of K-12 substantially shifts due to the increased influence of

technology and advances in technology, many school districts began incorporating online

learning opportunities to increase learning options for students in honors and advanced

placement (AP) courses. It soon expanded to help schools meet federal and state

requirements of No Child Left Behind (NCLB) and embraced the ideology of virtual

learning environments. However, some critics cite that online learning promotes learning

in isolation. Digital programming is frequently used to provide credit recovery courses to

students. The increased interest in online programming is not limited to any specific school district or public school type.

Recent studies highlight rural school districts utilize digital coursework more frequently than urban and suburban schools (de la Varre, Irvin, Jordan, Hannum, & Farmer, 2014). It was estimated that rural schools enroll more than 12 million students in online coursework (Aud et al., 2013). Nonetheless, the student demand for online learning is at a peak as it allows for flexible scheduling and individualized learning (Botsch & Botsch, 2012). Administrators of all district types must devise supports to aid both struggling and high achieving students on limited operating budgets, as well. The expansive options provided to administrators positively contribute to the increased popularity of virtual learning.

Online learning presents a viable pathway to graduation for high school students. As such, another primary reason behind the explosive growth of K-12 online learning relates to the looming economic and social costs associated with high school dropouts. Ou and Reynolds (2010) estimated costs affiliated with high school dropouts in the United States at billions of dollars annually. Allensworth and Easton (2007) performed research in conjunction with the Consortium on Chicago School Public Schools. They reported students on-track at the end of their freshman year to graduate from high school are four times more likely to graduate than students who are off-track after their freshman year. Allensworth & Easton (2007) emphasize that failing a class in grade 9 is one of the most significant predictors of not graduating from high school. Those who fail to earn a high school diploma are more likely to earn lower wages, be unemployed, be incarcerated and secure suitable employment (Franco & Patel, 2011; Goodman, Hazelkorn, Bucholz,

Duffy, & Kitta, 2011). Other outcomes associated with students who leave high school early are increased health problems and shorter life expectancy (Stevens & Frazelle, 2016). In essence, digital learning has the potential to provide economic savings, both educationally and socially.

In a study investigating why high schools are utilizing online learning and blended learning models, Picciano et al. (2012) found credit recovery courses are embraced by urban high schools, which historically have the lowest graduation rates across the United States. Credit recovery gives students with failing grades, high absenteeism, or have dropped out of school a chance to recover credits towards graduation (Dessoff, 2009). Credit recovery refers to courses that are given to students to replace previously failed courses that make up credits required for graduation (Franco & Patel, 2011), placing them back on track towards a timely graduation. Credit recovery courses, one of the fastest-growing areas of online learning (Davis, 2011), are offered to increase the graduation rate and reduce the dropout rate.

With the increased popularity of virtual learning and credit recovery, several school districts are growing the implementation of online learning through vendors, virtual schools, collaborations with local universities, and independently to personalize and accommodate the needs of varied learners. Thereby, districts are offering additional online courses for new credit, including credits that are not traditionally available face-to-face. Such courses might include advanced placement courses, honors courses, or dual enrollment courses.

Digital coursework appeals to district decision-makers and stakeholders for several reasons. Online learning programming can greatly transcend barriers that limit

educational attainment and maximize the learning potential of underrepresented students

in K-12 (Laing, 2010), as well as advanced students. The popularity of digital course

programs is strong because it is an attractive option for students who work, have family

obligations, job commitments and financial responsibilities (Flynn, 2016), are

geographically isolated (de la Varre, et al., 2014), are at risk of failing, dropping out,

displaying socio-emotional needs or classroom behavioral concerns because of the

flexibility, convenience, and personalized learning pace. Online education potentially

eases financial constraints, attracts and retains teachers, and increases student enrollment

(de la Varre, et al., 2014). Some administrators incorporate online learning opportunities

to address broader school reform issues such as increasing the high school graduation

rate, differentiating instruction (Picciano et al., 2012), and overall expand curriculum

offerings to meet the learning needs of diverse learners.

When addressing online programming, be advised of the language typically

associated with it. Frequently the terminology utilized by researchers varies. For

example, Ohio is home to multiple community e-schools, dropout recovery schools,

online charter schools, district-based e-schools, and several blended learning consortia.

Gemin et al. (2015) record many statewide programs across Ohio, including 24 virtual

charter schools, sometimes referred to as "e-schools." For the purpose of this study,

online learning, virtual learning, E-learning, and digital learning are identified and will be

used interchangeably.

Just as the language to describe online learning grows, enrollment in online

learning continues to expand across the country. de la Varre (2014) writes that 23% of

the urban school districts and 28% of the suburban school districts utilize forms of digital

learning. It is difficult to ascertain the exact number of students enrolled in online courses because of the many pathways available to interact with online education, such as Google Classroom, Massive Open Online Courses (MOOCs), and countless software and learning management systems, to name a few.

The advancement of technology and its availability has paved the way for significant shifts in education, making education less one-size-fits-all, thus, broadening educational plans for all students to succeed (Franco & Patel, 2011; Curtis & Werth, 2015; Wicks, 2010). Despite the complex nuances surrounding online education, research has shown it presents a platform for learning with benefits and challenges for current high school E-learners. For example, online courses offer flexibility and expand school choice by offering the students the option to attend schools outside of their home district, though virtual learning environments potentially enhance isolation for students. Online learning represents a growing pathway to high school completion. It provides students an opportunity to recover credit, take advanced courses, and dually enroll in traditional courses simultaneously (Wicks, 2010). In addition to isolation, virtual learning presents other challenges and disadvantages.

Sometimes the assignments in online courses are reported as unclear or frequently misunderstood. Other times, assignments are touted as simple and less rigorous. The term rigor itself is complicated and difficult to define. In a study exploring student perceptions of rigor at the university level, Duncan, Range & Hvidston (2013) found that students reported rigorous online coursework simply as "value-added." Digital learning permits students are allotted more time to absorb content, while others are permitted to work more quickly (Perry & Pilati, 2011). This added value arguably presents a

challenge when face-to-face interaction is not available for students in need of hands-on instructional support.

Some students may not fully participate in online activities as they would in a traditional classroom. Access to digital learning is an asset in providing equitable educational opportunities; however, it may also adversely contribute to higher attrition for students who do not find success (Wladis et al., 2016). Digital course work can strengthen technology and Internet skills. Winterwood (2010) suggests the transition to the information age, sometimes referred to as the digital age, highlights individuals possessing the skill set to navigate successfully within a globally-networked digital environment adequately, and are the person's that will ultimately have access to the social, political, and economic structures of contemporary society. For these reasons, it is imperative to identify learner characteristics, interventions, and students who will most likely promote successful outcomes in online environments.

For nearly two decades, the number of school districts offering online courses has been accelerating (Picciano, Seaman, & Allen, 2010; Baturay & Yukselturk, 2015) and online learning continues to experience phenomenal growth in the K-12 sector (Koh, Barbour & Hill, 2010; Perry & Pilati, 2011; Britt, 2015) along with technological innovations (Baturay & Yukselturk, 2015) and the school choice movement (Barbour, 2011). The expansion of online learning is often ascribed to its affordability, advancement, and availability of technology, the additional program offerings, education policy, increased digital literacy of teachers and students, and improved educational outcomes (Berger-Tikochinski et al., 2016). These variables combined enable districts

flexibility to manage increased enrollments within the existing infrastructure (Journell, 2012). Over time, the cost of online learning will decrease.

One of the most prominent advantages of online learning is the interactions and communications it affords E-learners. Strong English reading and writing skills naturally are necessary because most online courses are written. However, online learning researchers debate whether communication in online learning facilitates autonomy and flexibility, or is it an essential enabling learning feature necessary for interaction between instructors and learners (Anderson, 2008). Students are expected to strengthen their ability to communicate effectively personally and electronically with teachers and staff of online learning programs.

Experts in online learning research suggest practitioners exercise extreme caution with K-12 virtual education, particularly with students outside of the highly selective group represented in the literature (Barbour, 2011). The successful ideal student in online learning is consistently described as one that is "highly motivated," or "self-motivated," "high achieving," "self-directed," "hard-working," and "works well independently," (Barbour & Reeves, 2009). The first online learning programs were specifically designed to support the needs of students with higher aptitudes and aspirations (Mulcahy, 2002), which leads researchers to question whether online learning is suitable for all learners (Barbour, 2011). Understanding the complexity of online learning is vitally important for all students enrolled, mainly, for those that lack the evidence-based criteria to be successful.

Despite the documented challenges, online learning displays the potential to impact traditional educational purposes and processes (Rice, 2009) to remove barriers to

learning, increase equity and provide flexible learning opportunities for underserved learners at risk of failing (Koh et al., 2010; Barbour, 2011), and allow students more control over their education (Britt, 2015). To this end, districts enroll students demonstrating limited characteristics of the highly selective profile suggested for online learners in both credit recovery and new credit courses to advance towards graduation.

Data from collegiate studies indicate that the completion rates for online courses are approximately 30% to 40% (Andersson, Arvemo, & Gellerstedt, 2016). One of the most widely reported disadvantages of online learning is its double-edged sword of isolation or lack of community. Ainsa (2017) found isolation to be less evident for online learning in an investigation to promote online student engagement. In addition to limited face-to-face interaction, some assume online courses are less rigorous and simpler to complete without human contact. Like the opportunity to improve and advance English and writing skills, limited language skills may serve as an impediment for online learners. Barbour (2008) investigated student perceptions of learning online and found the most considerable difficulty reported was related to technical issues, including the online tools, lack of time, and difficulty interpreting the goals and objectives. Barbour further suggests that intentionality should be focused on preparing students to learn independently in digital settings (Barbour, 2008). As with any educational endeavor, caution must be exercised to provide optimal learning spaces for students.

Therefore, reviewing and understanding characteristics, demographics, and predictors of success are instrumental in our understanding of online learning as it relates to virtual programs at the high school level. Advocates of online learning are seeking contemporary research that explores issues related to the quality of online learning,

factors to enhance student experiences, and structuring the online learning environment (Kumi-Yeboah, Dogbey, & Yuan, 2018). Additionally, virtual learning characteristics are an area that requires further research for secondary school-aged youth.

To adequately review attrition, researchers first, must explore course completions as a component of the investigation. The importance of examining course completion rates is indisputable when exploring online learning options for high school youth in pursuit of a diploma. Successful learners in an online learning environment are expected to be the students who are better prepared to navigate the complexities of online learning formats. Learner characteristics, both cognitive and non-cognitive, are at the heart of understanding preparedness for online learning models. Cognitive skills refer to conscious mental activities, such as locus of control, efficacy, achievement motivation, thinking, reasoning, understanding, learning, and remembering. Non-cognitive skills are those that influence perseverance, self-regulation and conscientiousness, and overall socioemotional well-being. Online readiness is comprised of both cognitive and non-cognitive skills that must be assessed of all E-learners before enrollment. Is it possible to possess one or the other and still successfully complete courses in virtual learning programs?

It is evident that online learning has become immersed in the current high school culture for a variety of reasons. The absence of trust in public school environments declines in the middle and high school levels (Ravitch, 2010). The lack of trust may be correlated with high school students seeking alternative learning solutions, namely, online learning programs. To this end, building trust within school institutions helps to foster positive academic and social achievement among Black male students (Rhoden,

2017). Due to the perceived lack of social interaction in online programming, trust may or may not serve as a determining factor of success for this student population.

Previously emphasized, one finding that supports the popularity of online learning programming at the high school level is the positive correlation to increased graduation rates. It should be noted that recent research tends to focus on and report graduation rates as opposed to dropout rates. The investigators for this study suspect the spike in the research to primarily address graduation rates is for varied reasons, including the difficulty in calculating dropout rates presented in research and is further complicated when calculating dropout rates for online programming.

The United States dropout rates tend to be more severe for students at-risk of failing, particularly among the African-American and Hispanic male populations (Franco & Patel, 2011; Rauh, 2011), estimating close to 50 percent fail to complete high school on time (Dessoff, 2009). Bridgeland, DiIulio, and Morison (2006) estimated that more than one million American high school students drop out each school year. Dessoff (2009) reported approximately one-third of high school students to fail to graduate with a diploma, averaging 7,000 students drop out daily. Researchers have found the dropout and failure rates tend to be significantly higher for primary and secondary digital learners than those enrolled in traditional face-to-face classrooms (Roblyer, Davis, Mills, Marshall, & Pape, 2008). These findings align with the estimated higher dropout rates between 10% and 20% for students enrolled in higher education virtual coursework (Stover, 2005; Wojciechowski & Palmer, 2005; Clay, Rowland, & Packard, 2008). Reports from online learning at the college level indicate student dropout rates are higher than those enrolled in face-to-face courses, aligning to K-12 investigations.

Black male youth have been identified for nearly every school failure indicator, including the dropout rate, absenteeism, and achievement (Bridgeland et al., 2006). The authors report that less than 50% of African-American male adolescents graduate nationally. Per Tyler and Lofstrom (2009), the high school dropout rate for subgroups has remained relatively the same for nearly 40 years, indicating, African-American and Hispanic males have consistently been at-risk for failing. Black males are more likely to incur adverse experiences, such as suspension, expulsion, and academic failure in the American public education system (Laing, 2010), making equity and access questionable.

Research has long indicated that boys and girls learn differently. To this end, the educational needs of all students have to be addressed equitably. Minorities are continuously disproportionately affected concerning equity and access to courses needed for the college level as well (Worthen & Patrick, 2014). Underrepresented and disadvantaged students are enrolled in online learning, despite their prior academic records that adversely correlate to the characteristics described for an ideal student for online programming. The motivation behind this student enrollment may link to the need and effort to provide equitable and accessible education options that remove many of the barriers previously discussed.

The literature denotes students experience numerous challenges throughout the transition from middle school to high school (Allensworth, Gwynne, Moore, & de la Torre, 2014) that influence academic outcomes and the decision to leave school early. Further research investigating academic outcomes in K-12 learning environments indicate, there is no significant difference when comparing students enrolled in digital courses with students enrolled in face-to-face courses (de la Varre et al., 2014). After

reviewing online learning studies, Means, Toyama, Murphy, Bakia, and Jones (2009), found online learning is more effective than face-to-face learning; however, the researchers caution generalizing these findings to the K-12 sector because it was derived from studies in other settings including higher learning. Recognizing the challenges faced by students daily, districts readily employ online learning courses for students to recover credit, to increase graduation rates, and to offer courses that generally would not be available to students.

Studies about online learning and its benefits in the K-12 sector represent a growing field as it attracts critical attention as a direct result of its exponential growth. Online learning has been studied extensively at the collegiate level since its inception. Limited literature addresses online learning at the high school level. This study will investigate the likelihood of high school (9-12) students who will successfully complete online coursework. Further, the investigation will explore the differences of success or failure between males and females, between grade level classifications, and between Black students and Non-Black students enrolled in virtual programming.

Statement of the Problem

Ohio high school graduation was ranked twenty-ninth in the nation in 2018. The average graduation rate in Ohio was approximately 83.5% in 2015/2016, while the national graduation rate was 84.1% (OneOhioNow, 2018). Given, the graduation rates are currently close in range, Ohio's graduation rate declined from 87.5% in 2012/2013. Education patterns across the United States continue to correlate the decline of the graduation rates to various factors, including the limited educational attainment of students with disabilities, English Language learners, and students of color within the

American public education system today. The growing body of research related to high school education in the United States demonstrates there is increasing interest by researchers to examine the effectiveness of learning options for all adolescents, including online learning.

However, limited research in [secondary schools] online learning exists (Barbour & Reeves, 2009; Borup, Graham, & Drysdale, 2014) to explore the development of K-12 online learning communities (Cavanaugh, Barbour, & Clark, 2009). The research findings from university-level online education have been generalized across all levels of education. Of the research conducted in online learning settings, K-20 typically focused on outcomes based on a single course, program, or institution (Picciano et al., 2010). An abundance of the limited research on the practices of K-12 virtual schools has been conducted in the United States (Barbour & Stewart, 2008). A survey of district administrators found that 64% of the students enrolled in full-time online learning programs are in grades 9-12. The administrators reported online learning was utilized to offer advanced placement courses, credit recovery courses, and courses that were otherwise not available at the school (Lips, 2010).

Sparse high school literature exists to describe the characteristics of and the factors predicting success for students outside of the highly selective group enrolled in online learning. Bradley, Browne, and Kelley (2017) performed a study on achievement in online learning environments, and confirmed self-efficacy and self-regulatory learning behaviors are reliable predictors of academic success in online courses. According to Waschull (2005), the most reliable predictor for positive online course outcomes is student G.P.A.s for college students.

As America's schools continuously identify pedagogical best practices, resources, programs, etc. to significantly close the widening opportunity and achievement gaps, the most notable gap in achievement exists between African American males and their White classmates (Neblett, Jr., Chavous, Nguyên, & Sellers, 2009; Vega, Moore III, & Miranda, 2015). Alarming statistics demonstrate that minority males of color are most at-risk of not graduating from high school. Xu and Jaggars (2013) found that Black students in college with low GPAs did worse in online courses than expected when compared to their face-to-face counterparts. Wladis, Conway, and Hachey (2015) conducted research at the collegiate level exploring online STEM (Science, Technology, Engineering, and Mathematics) classrooms. They found that ethnicity was not related to online course outcomes when related to traditional face-to-face courses.

Online learning plays a significant role in providing a context for transforming potentially adverse school outcomes into positive school experiences among youth. "The rise of casual learning and communities of interest online showcase the rapid movement toward informal learning contexts" (Meyers, Erickson, & Small, 2013, p.366). The online learning environment can be developed to influence how teachers provide instruction, how content is communicated to marginalized students, and increase graduation rates across the American public education school system. This is a significant shift for students who are deficient in the credits toward graduation. Intentional supports and online courses designed to recoup skills and content could significantly increase the graduation rate. Determining whether the impact of online advantages outweighs the impact of low completion rates and other disadvantages are essential for the future of online learning.

Therefore, further research is required to uncover the predictors of success for students at risk of leaving school early enrolled in virtual learning. Decision-makers need rigorous research that examines the effectiveness of online learning for varying student subgroups to make informed policies to support students. Provided the unlimited potential outcomes of online learning, an urgent need exists to address quantitative predictors of success for youth enrolled in digital learning coursework. To this end, understanding the characteristics that influence completion rates and success in online learning courses will benefit educational leadership to identify students for online learning options effectively and to determine the value of investing in online learning platforms. The primary focus of this study was to investigate online learning in school districts across Northeast Ohio. The study examined online course completion rates, enrollment, and success rates based on gender, race, and grade level and grade level according to expected age.

Purpose of the Study

Student retention is a significant challenge for online learning. Online learning programs tend to report failure and dropout rates that are significantly higher than the traditional classroom dropout rates. Some research indicates a 10% to 20% lower student retention rate in college online courses (Holder, 2007). Patterson & McFadden (2009) found the dropout rates for students enrolled in an online Masters of Business Administration (MBA) and Communications Science and Disorders (CSDI) degree online programs to be six to seven times higher than students enrolled in the traditional face-to-face campus degree programs. Still, a myriad of academic research explores the quality of digital learning across institutions of higher education with varying results.

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Much of the research reviews adult online participants and their experiences when enrolled in online learning courses (Rice, 2006; Cavanaugh et al., 2009; Barbour & Reeves, 2009). Recent studies demonstrate the effectiveness of online learning, as similar, to the effectiveness of face-to-face classroom instruction (Perry & Pilati, 2011).

However, relatively few studies have examined the role of learner characteristics associated with student success, especially for high school level students. Roblyer et al. (2008) explained that there is considerable diversity across the literature about factors that may contribute to online course success. Additionally, the research measures multiple sets of variables with various populations. The findings are vastly inconsistent across the research. Other research reports that high attrition rates might be the result of school district policies used to determine how students are counted (Hawkins & Barbour, 2010). In fact, very little is known about who enrolls in K-12 online learning, the rate at which students complete courses, and how enrollment and passing rates vary across subgroups and subject areas (Stevens & Frazelle, 2016). There is a need to examine differences in student characteristics of successful online learners to predict better which students are at higher risk when completing online coursework.

What we know about online learning is primarily derived from research undertaken in institutions of higher education. Existing research has extensively explored course design and development. Some studies have investigated student engagement and activity, quality of online learning, online teaching methods, and online outcomes. Meanwhile, others explore student background, previous academic experiences, and attrition. Evidence from recent studies proposes online learning readiness as a critical aspect of academic success for this model of learning. As online learning at the high

school level becomes more prevalent, researching online readiness to complete courses successfully is a growing concern. Continued research is required to examine success predictors for students enrolled in online learning to develop strategies to enhance academic success. It is essential to understand e-learning and the characteristics of the participants and their impact on virtual learning outcomes.

The primary purpose of this study will explore course completion rates when compared with various learner characteristics of high school online learners. We must understand the differences between students who are finding success with those who are not in online learning to better provide youth with appropriate instructional opportunities and supports. This investigation will examine archived data from online learning programs across Northeast Ohio to determine whether gender, race, grade level, and grade level according to expected age significantly influence course completion rates. The findings will be used to identify determinants that are predictors of success for high school E-learners in digital learning settings, and contribute to the empirical base of high school online learning.

Significance of the Study

Maintaining stable and high-quality access to education in public schools is vital to improving academic achievement. As a medium to encourage student learning, online programming removes preconceived notions about race, economic background, sexual orientation, and education level (Laing, 2010). School systems across America leverage online learning to prepare students to compete globally. Students provided with access to effectively use technology and build strong communication skills are better prepared to interact in a global economy. Considering the enormous growth of virtual learning, it is

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essential to identify successful learner characteristics of high school learners enrolled in online courses. As such, adequate training and teacher preparation, best practices for interventions, and overall characteristics for successful distance learning might be more readily identified. American schools must provide equitable models of learning that are advantageous for the preparation and education of our youth today.

Despite the growing use of online learning, research on the efficacy of the programs is limited. Research demonstrates the high school student passing rates in online coursework are generally 30-60 percent (Blazer, 2009). Hernandez (2005) reported that digital learning programs are a way to "provide equity and access to students from small and rural schools, and to students who are typically disadvantaged due to their ethnicity." Online programs extend practical options to home-schoolers by providing access to course materials and curriculum (Barbour & Reeves, 2009) via the Internet. Findings in the literature about online learning are conflicting and underscore a clear need to research completion rates and explore the predictors of success that positively influence higher academic outcomes for diverse adolescent learners. There is a need to effectively identify learner characteristics and traits that are likely for adolescents to be successful in digital learning environments. Additionally, online learning should be explored to improve the quality and equity of learning at the high school level (Barbour, 2010).

This study used archived data to explore the likelihood of course completion percentages based on gender, race, grade level, and grade level according to expected age. The findings suggested learner characteristics that influence successful course completions by students in Northeast Ohio public high schools. The findings from this

study contribute to the empirical studies of high school online education concerning course completion percentages.

The results of this study are recommended for school counselors and administrators to implement and manage online programs successfully. This study also provides insight for education leaders and stakeholders in developing online learning policies and procedures to support students in finding success in digital learning environments. The findings inform local school administrators, decision-makers, teachers, counselors, and other stakeholders to develop supports and interventions to ensure the students successfully complete online course work leading to improved graduation outcomes. The results of this research will help to improve the implementation of online learning programs and increase student success in an online learning environment. The results of this study can also be used to better prepare teachers entering the profession of teaching.

Research Questions

The online course completions explored in this investigation will be addressed by the following research questions:

RQ1: Is there a statistically significant difference between male and female students in grades 9-12 in online course completion percentage?

RQ2: Is there a statistically significant difference between Black and Non-Black students in grades 9-12 in online course completion percentage?

RQ3: Is there a statistically significant difference based on grade level for students in grades 9-12 in online course completion percentage?

RQ4: Is there a statistically significant difference based on whether or not a student is classified in the correct grade according to age in online course completion percentage?

Across the research of online education, various terms are found in the literature. The phrase online learning encompasses online learning education, virtual education, digital learning, e-learning, electronic learning, and distance education. Since the language varies among researchers, the key terms online learning, virtual learning, and digital learning are identified and will be used interchangeably throughout this dissertation. Additional vocabulary and terms are detailed in the definitions provided below.

Definition of terms

Asynchronous learning – Communication exchanges which occur in elapsed time between two or more people. Examples are email, online discussion forums, message boards, blogs, podcasts, etc. (iNACOL, 2011).

At-risk student – Any student who is performing poorly academically, or who may face learning impediments not limited to socioeconomic status, behavioral disabilities, learning disabilities, and home, family, and/or community stresses; may also specifically refer to students in danger of not passing a course or graduating from high school (iNACOL, 2011).

Blended course – A course that combines two modes of instruction, online and face-to-face. Also, referred to as hybrid learning (iNACOL, 2011).

Blended learning – A formal education program in which a student learns at least in part at a supervised brick-and-mortar location away from home and at least in part through

online delivery with some element of student control over time, place, path, and/or pace; often used synonymously with Hybrid Learning (Horn & Staker, 2011).

Course completion – The percentage of students completing a course(s) within a certain time frame with a C or higher. The term is used in two ways: 1) The percentage of courses that are successfully completed by a student; or 2) the percentage of students who have successfully completed a single course. When determining successful completion using either definition, a program needs to include three components: 1) which students are included in the calculation (i.e., students enrolled after the drop period ends, students enrolled at the end of the term, etc.) and the length of the drop period; 2) the length of the course itself, including whether it is fixed or flexible; and 3) the academic requirements associated with completion (i.e., whether students need to pass an exam, or pass the course itself, to be considered as having completed it) (iNACOL, 2011).

Course enrollment data – The number of students formally in a course. Course enrollment data are influenced by registration periods, duration of course (semester, year-long, or flexible schedules for competency-based credits), drop/add periods and "count" dates that determine accuracy of number of students enrolled per course, completion and/or attrition rates (iNACOL, 2011).

Course Management System (CMS) – The technology platform through which online courses are offered. A CMS includes software for the creation and editing of course content, communication tools, assessment tools, and other features designed to enhance access and ease of use (Watson & Kalmon, 2005). See "Learning Management System"

Credit recovery – Refers to a student passing, and receiving credit for, a course that he/ she previously attempted but failed in earning academic credit towards graduation

(Massachusetts Department of Elementary & Secondary Education, 2010). (iNACOL, 2011).

Digital Learning – Any instructional practice in or out of school that uses digital technology to strengthen a student's learning experience and improve educational outcomes. It is used broadly and not limited to online, blended, and related learning. It encompasses a wide range of digital tools and practices, including instructional content, interactions, data and assessment systems, learning platforms, online courses, adaptive software, personal learning enabling technologies, and student data management systems (Gemin et al., 2015).

Drop-out rate – The number of students who do not complete a course as a percentage of the number who enrolled in online courses (iNACOL, 2011).

Full-time online program – Full-time online schools, also called cyberschools, work with students who are enrolled primarily (often only) in the online school. Cyberschools typically are responsible for their students' scores on state assessments required by No Child Left Behind, which is the primary way in which student outcomes, and school performance, are measured. In some states, most full-time online schools are charter schools. (Watson, Murin, Vashaw, Gemin, & Rapp, 2010)

Hybrid course – A course where the majority of the learning and instruction takes place online, with the student and teacher separated geographically, but still includes some traditional face-to-face "seat time." In hybrid online courses the online instructor remains the teacher of record even though the student spends time with additional educators (Gemin et al., 2015).

Learning Management System (LMS) – The technology platform through which

students' access online courses. A LMS generally includes software for creating and

editing course content, communication tools, assessment tools, and other features for

managing the course. (Northwest Educational Technology Consortium, 2005) See

"Course Management System".

Online course – A full course education experience in which instruction takes place

primarily over the Internet, using an online delivery system to provide access to course

content. It may be accessed from multiple settings (in school and/or out of school

buildings). A certified teacher is the teacher of record for the course (Gemin et al., 2015).

Online facilitator – This term is used in two ways. 1) For part-time online programs is

the person working face-to-face with the online student to monitor student progress and

attendance, providing training, assist in motivating the student, etc. The person may or

may not be a certified teacher but works in conjunction with the certified online teacher.

2) Used interchangeably with online teacher or online educator (iNACOL, 2011).

Online learning – Education in which instruction and content are delivered primarily

over the Internet. (Watson & Kalmon, 2005) See "Virtual learning," "Cyber learning,"

"e-learning, e-school," "virtual school," "distance education," and "web-based

education."

Online learning program – An online learning program is an organized offering of

courses delivered primarily over the Internet. Online learning programs work directly

with students and deliver online learning services, but are not physical "schools." Online

learning programs may include state virtual schools, districts, consortia, and other

suppliers (iNACOL, 2011).

Online School– A formally constituted organization (public, private, state, charter, etc.) that offers full-time education delivered primarily over the Internet (iNACOL, 2011). See "virtual school," and "cyber school"

Original credit course – A course taken by a student for the first time, and is credit bearing. These may be core or elective courses. Sometimes referred to as initial credit, new credit or first time courses (Gemin et al., 2015).

Part-time online program – An online program that allows students to take less than a full load of online courses, as defined by local or state legal entities. Sometimes refers to a "supplemental online program" (iNACOL, 2011).

Personalized learning – Refers to tailoring learning for each student's strengths, needs and interests-including enabling student voice and choice in what, how, and when they learn-to provide flexibility and supports to ensure mastery of the highest standards possible (Patrick, Kennedy, & Powell, 2013).

Synchronous learning – Online learning in which the participants interact at the same time and in the same space (iNACOL, 2011).

Virtual class – A group of students assigned to the same online course (iNACOL, 2011).

CHAPTER II

LITERATURE REVIEW

Introduction

Distance learning began with European correspondence courses over a century

ago (Buckley & Smith, 2007) and evolving to what is referred to as virtual learning

today. The literature surrounding online learning programs for secondary education

began appearing in research journals in 1997 (Cavanaugh et al., 2009) with the first two

virtual schools, The Virtual High School (VHS) and the Florida Virtual School (FLVS)

(Barbour & Reeves, 2009). Online learning has become an essential component within

the American educational ecosystem and plays a crucial role in student achievement and

graduation rates across the country. Research related to online learning programming for

high school practices, learner characteristics, effectiveness, applications, and policy is

limited. With the increased options of online education in secondary schooling, policy

appears to be student-driven to meet the needs of all learners. As such, a growing

demand to increase the empirical research on online learning exists to determine whether

it can effectively address disparity and challenges experienced by students in face-to-face

classrooms both authentically and effectively.

The existing body of research on secondary online learning is mostly derived from investigations conducted in higher education settings. Research suggests extensive education and training must be provided to teachers and students to effectively implement online instruction (Journell, 2012; Wood, 2005). More studies are required before researchers can conclusively attest to the effectiveness, or the converse, of online learning opportunities for students enrolled in high school digital coursework. The movement toward online education necessitates the need for more empirical-based evidence on student retention and the learner characteristics of successful online learners (Baturay & Yukselturk, 2015).

Ten of millions of students have been enrolled in high school online coursework (Watson, Pape, Murin, Gemin, & Vashaw, 2014). Many states have established virtual schools, while several school districts are creating their own online courses. Some of the virtual schools have proven to be hugely successful, while other's success is questionable. Roblyer (2006) found some statewide schools are successful for five reasons based on qualitative reports from directors of successful programs. The primary reason directors shared reflects the preparation of students for success. The psychological or transactional distance of online learning can leave students feeling isolated and lead to high dropout rates. Self-reports from students who dropped out from high school exposed that course failure and low self-esteem are two of the most common factors leading to dropping out (Tyler & Lofstrom, 2009). Online facilitators are instrumental in reducing dropout rates. They become familiar with small groups of students setting a climate for student learning (e.g., setting up learning communities (Roblyer et al., 2008) and building personal relationships (de la Varre et al., 2014). By preparing students with the appropriate

institutional support to manage the physical separation from the online instructors, the student's digital learning satisfaction is increased when a stronger sense of community exists (de la Varre et al., 2014; Perry & Pilati, 2011). Stevenson (2013) concluded from an investigation of learner persistence, the online learner needs an online community to remain persistent throughout online education. The directors noted students were provided checklists, self-assessments, and orientations as examples of preparation (Roblyer, 2006), in addition to customized lessons and instruction. Education research identifies four characteristics of active learning environments as:

- Active engagement
- Participation in groups
- Frequent interaction and feedback
- Connections to real-world contexts

Additional research adds instructional activities are provided to appeal to multiple learning styles and expand student understanding of content (Roschelle, Pea, Hoadley, Gordin, & Means, 2000; Picciano et al., 2010).

Second, professional training to learn monitoring strategies, facilitate student work, and discussions are suggestions for teacher preparation (Roblyer, 2006). Just as time and resources are allocated to prepare students for success, the teachers must be prepared as well. The role of the online teacher helps to prevent student attrition by designing a comfortable learning space that promotes trust and establishes community (de la Varre et al., 2014). Thirdly, interactive courses, and flexible course designs were strongly advised as components of successful programs (Roblyer, 2006). Baturay & Yukselturk (2015) reports interaction as another essential element for online learning that

positively influences achievement and learner satisfaction. Meeting learner expectations is vital for online learner success. Fourth, successful programs exemplify high support for the teaching staff and are monitored by site facilitators (Roblyer, 2006). Lastly, the directors report students of successful programs are monitored and supported with an individualized, tailored program and personal interactions with the teachers (Roblyer, 2006).

Roblyer (2006) also reported three primary reasons some statewide online schools fail based on the interviews with online learning program directors. The first factor addresses the student population. Most of the students enrolled in the schools are advanced, highly motivated, or have a credit recovery need. Thereby, schools or programs that enroll a high percentage of students at risk for failing are much more likely to have higher failure rates. Secondly, methods of calculating dropout rates vary. So, the dropout rates are influenced by how and when the rates are calculated. Some programs offer a drop period so that only the students enrolled outside of those periods are counted. The final factor reflects startup costs, resources, and sustainability strategies. This factor strongly influences program implementation, staffing, and support services.

Driven by government mandates to improve high school results, credit recovery programs are frequently reported as a reason for the tremendous growth of virtual learning. Credit recovery courses or programs are offered in eighty-eight percent of school districts across the United States (Stevens & Frazelle, 2016). Various forms of credit recovery were motivated by federal and state requirements as a strategy to reduce dropout rates and increase graduation rates (Wolff, 2014; Picciano & Seaman, 2009). Since its inception, schools increasingly offered credit recovery courses that eventually

evolved into online options. Other sectors of education offered digital coursework to provide equitable and affordable course options such as Advanced Placement. Currently, school districts offer courses for credit recovery and for new credit.

Online learning serves as a monumental life-line for rural school districts. Distance learning may assist rural schools in avoiding school closures or school consolidation out of necessity. Rural school districts use online learning coursework to offer both a comprehensive curriculum and advanced courses (de la Varre et al., 2014).

Online Learning Overview

In the high school community, online learning may take the form of full-time virtual schools, district-based programs, or statewide supplemental programs (Cavanaugh et al., 2009). Full-time digital learning schools are frequently referred to as virtual schools or cyber schools (Watson, Murin, Vashaw, Gemin, & Rapp, 2011). In a review of the schools and programs, programs are more numerous than schools and are typically in operation at either the school district level or the state level (Holstead, Spradlin & Plucker, 2008). The local school remains responsible for overseeing the program, assessing student progress, and providing special education services. The goal of supplemental programs is to allow students to enroll in online courses in addition to traditional classroom courses offered by the local school (Pettyjohn & LaFrance, 2014).

All in all, three conventional methods of instructional delivery exist in online programming: independent, asynchronous, and synchronous. The independent student is essentially self-teaching. In the asynchronous method of delivery, students interact with the curriculum and submit coursework that will receive written feedback and grades from the instructor. Students access materials at times and places convenient to them (Perry &

Pilati, 2011). Through asynchronous methods, online learning instruction promotes self-paced learning by creating a means for interactions between teachers and students (Khechine, Lakhal, Pascot & Bytha, 2014). The students choose when and where to access the instructional materials. Examples of asynchronous tools are discussion threads and email communications. In the synchronous instructional method, the student and teacher interact at the same time. The facilitation of the course curriculum is conducted with the student (Barbour & Reeves, 2009). Students enrolled in programs utilizing synchronous methods learn in real-time with the instructors. Examples of synchronous tools are chat rooms and instant messages. Ultimately, the instruction and feedback occur immediately through synchronous digital learning (Barbour, 2008), while various forms of feedback and communication tools are employed through asynchronous digital learning.

Blended, often referred to as hybrid learning, is an instructional model that blends 30% to 79% of the content online instruction with face-to-face instructional delivery and support and a model that is increasingly evolving in popularity at all education levels (Picciano & Seaman, 2007; Picciano et al., 2010; Perry & Pilati, 2011). It is often described as a blend of asynchronous learning with synchronous learning. For some students, hybrid learning is the best of both worlds, and for others, it may be the worst (Perry & Pilati, 2011). Blended learning describes learning settings that incorporate distance and local activities (Wheeler, 2007) or instruction involving a combination of face-to-face education and online learning (Perry & Pilati, 2011) or "anytime, anyplace learning" (Wheeler, 2007). Graham (2006) suggests blended learning can be integrated on a four-dimension continuum- space (physical/face-to-face vs. distributed), time

(asynchronous vs. synchronous), fidelity (use of all senses vs. text only) and humanness (high human contact/no machine vs. little to no human connection/high machine). Given the definition of blended learning, there is no single form of blended learning can be executed in varied ways across the continuum.

Blended learning is a model districts are implementing to circumvent the achievement gap for youth males of color and other underserved populations. According to Seaman (2009), blended learning produces better outcomes than face-to-face and online instruction. Key components that are equally important for online learning frequently attributed to blended learning are the sense of community, timely feedback, clear expectations, and a reasonable chance for success (Perry & Pilati, 2011). Typically, K-12 online learning programs are described as supplemental or full-time. Supplemental programs allow students to dually enroll in brick and mortar settings while taking some online courses. The full-time programs enable the students to complete all educational courses online (Barbour, 2011).

High school online learning offers numerous benefits to the school and the student. Namely, advanced technology provides bimodal student populations with multiple options to earn credits toward graduation (Pettyjohn & LaFrance, 2014) and provides individualized instruction with new formative assessment models (Holstead et al., 2008). Students develop stronger self-efficacy, take ownership for learning and can interact with academic content in an innovative way (Pettyjohn & LaFrance, 2014). Laing (2010) closely reviewed the disparities experienced specifically by Black male students and non-traditional approaches to education. The researcher identified three

objectives to consider necessary for virtual classrooms. Here the objectives are generalized to address the needs of all disadvantaged students:

1. The virtual learning site will be a space for students to learn and seek improvement in their performance in education.

2. To bring students performing at various levels together in a supportive environment.

3. To recruit quality teachers to teach various academic subjects infusing non-traditional methods to instruction.

Online learning gives students who are behind in credits the chance to get back on track academically (Pettyjohn & LaFrance, 2014). A key feature of online education is that it expands learning opportunities regardless of geography, socio-economic status, or background (Holstead et al., 2008). Digital learning programs can serve students of all ages. It is prominently used to serve students in grades 9-12 to extend opportunities to complete credit recovery courses, complete advanced placement courses, and pursue credits in courses not offered at the school (Lips, 2010). Other positive features of digital learning are opportunities for self-paced learning and individualized, unique learning experiences (Pettyjohn & LaFrance, 2014). A national study of school district administrators was conducted (Picciano et al., 2010). The administrators collectively agreed digital learning was an asset in the schools. Approximately 60% to 70% of the respondents identified the following constructs as necessary for online learning:

- Meeting the needs of specific groups of students

- Offering courses not otherwise available at the school

- Offering Advanced Placement or college-level courses

- Permitting students who failed a course to take it again

- Reducing scheduling conflicts for students

Rural school district administrators shared a particular need for online learning to offer courses that would otherwise not be available to the students (Picciano et al., 2010).

Some challenges exist with online schooling. Successful online learners typically demonstrate they are independent learners, intrinsically motivated, proficient time managers, high literacy skills, and robust technology skills (Barbour & Reeves, 2009). Generally, adolescents and particularly, students at-risk of failing, are not ready to assume high degrees of autonomy (Barbour & Reeves, 2009), and intentional steps should be taken to support these individuals (Oliver et al., 2009). The range of adolescents enrolled in online learning environments is expanding. Online learning programs appear to be limited in providing support for a broad range of students (Cavanaugh et al., 2009). Though, some researchers found a benefit of online schools is meeting the specific needs and learning styles of students (Barbour & Reeves, 2009). Course design and overall access to online learning tools can pose barriers to learning (Pettyjohn & LaFrance, 2014).

Quality online education is not a natural occurrence. It's significant benefit addresses providing instruction, despite geographical and physical barriers through technology-based supports (Perry & Pilati 2011). These authors reviewed online learning at the collegiate level, finding a major obstacle is finding faculty willing to learn a new pedagogy of teaching, receive technological training, and invest time developing courses that will maximize the online learning experience. Another impediment to online learning as it relates to instructors is one's belief in the integrity and rigor of online

learning. Stewart, Bachman, & Johnson (2010) reported 70% of faculty members surveyed felt online degrees are not prestigious and limits workforce opportunities.

The ability to self-monitor, self-motivate, learn meaningful social behaviors, and access resources are vitally important for students at-risk of failing (Archambault et al., 2010; Christle, Jolivette & Nelson, 2007). Consequently, credit recovery students require more supervision and mentoring because they are less motivated and interested in coursework (Oliver, Osborne, Patel, & Kleiman, 2009). Some critics argue online schooling diminishes the value of the high school experience (Pettyjohn & LaFrance, 2014). These are but a few concerns instructors and support teachers must address for online learners.

Online Learning Education Policy

Picciano et al. (2010) investigated whether or not online learning transforms education. From this cross-institutional research, four significant conclusions applicable to K-12 schools were drawn. First, online learning required public policy development at the federal, state, and local levels to provide a platform for transformation to occur. Picciano et al. (2010) added blended learning approaches would be more readily accepted than full online learning programs. Next, the researchers found teacher training, student and teacher preparation, and program development must be improved to provide quality online learning. Lastly, a cultural shift in pedagogical approaches is required to take advantage of online technology fully.

In comparison to the investigation performed by Picciano et al. (2010), the general infrastructure of online learning in America, beginning with No Child Left Behind, will be reviewed. The phrase, "All children can learn," took on new meaning

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with the passage of the No Child Left Behind (NCLB) Act in 2001, which required all states and districts to report progress on their advancement to close the achievement gap between minority students and their white classmates (Billig, Jaime, Abrams, Fitzpatrick, & Kendrick, 2005). Unfortunately, NCLB did not significantly decrease the achievement gap (Jehlen, 2009).

In 2009, President Barack Obama and Secretary of Education, Arne Duncan, announced Race to the Top (RTT). RTT provided competitive grants to states to encourage and reward states for creating innovative state reforms leading to improved teaching and learning, which would result in improved student outcomes. The Race to the Top-District competition awarded funds to educate students through a personalized approach to deepen student learning. Equity and access were cornerstones of program initiatives (U.S. Department of Education, 2017). Race to the Top was a national effort to assists states and districts to close the achievement gap. The report detailing the results of RTT indicates growth occurred in the preparation of the schools to close the gap. The report discusses the initiatives states took. For example, New York awarded grants to "dissemination and replication" schools that made progress in closing the achievement gap (U.S. Department of Education, 2015).

President Barack Obama also signed the Every Student Succeeds Act (ESSA) into law in December 2015. ESSA reauthorized the Elementary and Secondary Education Act (ESEA), which emphasizes the equal opportunity for all students (U.S. Department of Education, N.D.) Unfortunately, ESSA officials reported in July 2017, no state in America has produced a school model that could serve as an example to help address the needs of diverse students (Understanding ESSA, 2017).

The laws underscore the importance of providing access to the general curriculum and heighten the achievement of diverse learners. These laws under federal and state mandates were put into place to improve test scores, improve graduation rates (Dessoff, 2009), and to improve academic achievement. While NCLB encouraged conformity, RTT and ESSA promote diversity, equity, and innovation. Currently, the Every Student Succeeds Act (ESSA) explicitly urges school districts to increase innovation through technological advances. The Student Support and Academic Enrichment Grants program (which is authorized under Title IV, Part A, Subpart 1, section 4107 of the ESEA, as amended by ESSA), provides formula grants to States (which then make subgrants to local education agencies) to improve academic achievement by increasing State and local capacity meet al.l learner needs. Specifically, Part A of the Elementary and Secondary Education Act (ESEA) was amended to encompass the Student Support and Academic Enrichment (SSAE) programs. SSAE allows schools the flexibility to tailor programs based on the needs of their unique student population. The intention is to:

1.	provide all students with access to a well-rounded education;

2.	improve school conditions for student learning; and

3.	improve the use of technology in order to improve the academic achievement and digital literacy of all students.

The SSAE grants were released under non-regulatory guidance. Some examples of how these funds are used for improving the effective use of technology include innovative blended learning projects, providing students in rural, remote and underserved areas with the resources to benefit from high-quality digital learning opportunities, and delivering

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curricula with technology, digital learning technologies and assistive devices (South, 2017).

The U.S. Department of Education further supports these initiatives through the U.S. Department of Education's Office of Educational Technology (OET). The Office of Educational Technology is responsible for establishing the vision for the use of technology and developing technology policies. To this end, several local education agencies are implementing blended learning projects to assist in closing the achievement gap.

Graduation Rates

Over the past thirty years, the dropout rate has remained approximately 30% in the United States (Messacar & Oreopoulos, 2013). The graduation rate and dropout rate in the United States is a historical education concern that disproportionately affects low income and minority students. Even more complicated is designing a fair and appropriate strategy to calculate the failure indicator. Based on the Condition of Education Report (2019), the adjusted cohort graduation rate (ACGR) is the calculation strategy currently used to examine the percentage of high school students graduating on time (McFarland et al., 2019). ACGR was first implemented in 2010-2011. Essentially, the ACGR begins by identifying a cohort with first-time ninth graders in a specific academic school year. The cohort is adjusted by adding any student who transfers into the receiving high school and removing all students who transfer out, emigrate to another country or die from the total students enrolled by grade 12 of that cohort. The ACGR calculates the percentage of students in the adjusted cohort graduating with a high school diploma within four years. This four-year cohort graduation rate calculation has been implemented across the

country. It remains a challenging problem in education because the calculation is not taken until year four of a student's pathway towards graduation to identify whether one graduated on time or not (Shopoff & Eskelsen, 2018).

Like many states, controversy persists in Ohio when it comes to determining the proper metrics to calculate graduation rates equitably. Utilizing the four-year cohort model, ACGR, where the calculation occurs during the fourth year to account for progress towards graduation, is viewed as inadequate (Shopoff & Eskelsen, 2018). Given the high mobility rates of students in Ohio, this model presents controversy, as it is not an accurate measurement due to the negative relationship to graduation rates. Only the schools where a student last enrolled are evaluated for student success or failure. Thomas B. Fordham Institute (as cited in Shopoff and Eskelsen, 2018), receiving schools registering large numbers of credit deficient students, are at risk for low ratings following this calculation method. In an article, Stover (2005) notes these concerns are replicated in higher education pertaining to student retention. However, this strategy may incentivize high schools to encourage under-credited students to transfer to external online schooling programs to increase reported graduation rates (Shopoff & Eskelsen, 2018), thus potentially contributing to the expansion of online programming.

Whether the term graduation rate or dropout rate is utilized to describe students failing to graduate from high school, it is not merely as important as it is to understand the high stakes attached to the life-long challenges associated with not graduating from high school. Students failing courses or dropping out of school are a detriment to themselves and school districts. Students without high school diplomas face several economic and social hardships worse than peers with a high school diploma. Those who

fail to complete high school are increasingly associated with earning lower wages, experiencing higher rates of incarceration (Franco & Patel, 2011; Goodman et al.,2011), experiencing teen pregnancy, being unhealthy, and bearing unhappy (Messacar & Oreopoulos, 2013). These researchers suggest increasing the rates at which students graduate from high school, strengthens the likelihood for greater college enrollments, improve career outcomes for youth, reduce crime rates and increase civic participation.

Adolescent School Experience

Adolescence is associated with a period of experimentation and vulnerability to risk behaviors (Rawatial & Petersen, 2012). Adolescents are frequently presented with trials that can weaken their educational achievement levels (Chung-Do et al., 2013). Literature estimates as many as 40% to 60% of all youth in urban, suburban and rural areas, excluding those that have already dropped out, are disconnected from school by the time they enter high school (Klem & Connell, 2004 & Monahan, Oesterle, & Hawkins, 2010). Educators and researchers across the country are feverishly seeking solutions to raise academic achievement, improve learning conditions, and overall increase positive educational outcomes for adolescents, including emotional well-being.

A notable gap exists between African-American, Latino, and White students in public education have been well documented (Vega, et al., 2015). According to these authors, other factors contribute to the existing gap between students of color and White students, including access to preschool and early childhood programs, access to high-quality teachers and high-quality curriculum, socioeconomic status, exposure to violence, and school support systems. Educational and psychological research demonstrates low-income, urban African-American male students experience systemic barriers placing

them disproportionately at-risk for school failure. (Vega et al., 2015). Further, it is documented that students of color are faced with tremendous adversity in their lives, such as poverty, family stressors, and low teacher expectations (Cunningham & Swanson, 2010). Holder (2007) emphasized positive support from family and friends is necessary for students to persist and succeed in online coursework.

A considerable amount of literature has been published on the importance of factors outside of the classroom and their influence concerning student retention. One such factor that is considered to be a significant source of academic difficulties is described in the literature as home-school dissonance (Brown-Wright & Tylor, 2010). Kumar (2006) defines home-school dissonance as the "perceived differences between the values and operations extant in students' home or out-of-school environment and those salient throughout their formal schooling experiences. Educational research offers evidence to support adverse effects related to home-school dissonance for African-American students on school performance (Brown-Wright & Tylor, 2010). These researchers further reported African-American high school male students might not be motivated to work towards high achievement when exposed to home-school dissonance. Stevenson (2013) suggests planning and implementing a variety of institutional support services have been determined to be essential to student satisfaction at the collegiate level. Some that may apply to high school students include academic advising, technological support, and academic support such as tutoring and library services. Research related to home-school dissonance for high school females is an area for future research.

Research literature associated with school success and African-American students primarily focuses on the adverse academic outcomes. According to Vega et al. (2015), students of color are adversely affected in the areas of academic achievement and success when there is limited school personnel support present. Tenenbaum & Ruck (2007) noted teachers make more positive referrals and encouraging comments to European American students than students of color. The authors further indicated that differential treatment might limit educational opportunities and contribute to a negative classroom climate. Positive relationships in school settings can be significant in making students of color feel supported and involved in their school community (Vega et al., 2015).

Parental involvement, identified by researchers and educators alike, has been identified as a critical component to student development. The type of parental involvement that is most influential for the Black male student's positive academic outcomes remains a dilemma for researchers. Some studies indicate home-based parental involvement is similarly correlated with educational achievement and desirable school behavior (Trask-Tate & Cunningham, 2010). With African-American female students, high degrees of parental involvement is essential for their development of expectations for academic success. This suggests varying types of parental involvement may affect male and female students differently (Trask-Tate & Cunningham, 2010).

Socioeconomic status (SES) has also been investigated as it relates to educational achievement and perceptions of school support. Students from higher SES families are more likely to complete advanced courses, foster positive student-teacher relationships and display favorable perceptions towards teachers (Trask-Tate & Cunningham, 2010).

Higher SES students strongly influence the quality and degree of parental involvement perceived by adolescents (Trask-Tate & Cunningham, 2010).

Race and gender arguably define the experience of Black male students (Laing, 2010). Exemplars are littered across the literature related to academic achievement for students at risk of failing. Ford and Harris (1996) found Black male students frequently reported their teachers did not trust them, teachers had low expectations for them, and called on them less during class. Black males are continually marginalized in the American public education system. Trust is a critical component in developing a positive learning environment with favorable academic and social outcomes (Rhoden, 2017). The author adds multiple layers of trust exist in educational institutions. Thereby, it is imperative to understand relational trust and institutional trust. Trust is comprised of four components-respect, personal regard, competence in core responsibilities, and personal integrity (Bryk & Schneider, 2003). Relational trust is referred to as "the social exchanged of schooling as organized around a distinct set of role relationships."

In contrast, institutional trust exists between an individual and the school or institution (Bryk & Schneider, 2003). This trust includes the relationship between the school and the parents. Ford and Harris (1996) further explained Black students are often taught by White female teachers, leading to a widening culture divide between African-American students and white teachers. Teachers can assist in fostering trust by engaging students in dialogue about learning. Once trust is achieved, students tend to perform better academically (Rhoden, 2017).

Bogenschneider (1997) reported parents are more involved with male student's schooling when they are reported as misbehaving and/or receiving poor grades. Gaytan

(2013) investigated factors affecting student retention in online courses at the collegiate level. The researcher interviewed 15 online learning experts and found self-discipline as the primary factor affecting student retention in online coursework.

Female students perceive more support from parents and teachers than male students (Trask-Tate & Cunningham, 2010). Reading is regarded as the most important skill a student must acquire to find success in school. Jackson and Hilliard (2013) discussed a study conducted by the Mayo Clinic in Rochester, Minnesota. This study reported boys were two to three times more likely than girls to be affected by reading disabilities (Jackson & Hilliard, 2013). The deficit is influenced by two factors: ineffective teacher training and limited access to books.

The school to prison pipeline is a national trend. The school to prison pipeline is a term coined to describe the progression of criminalizing students through school disciplinary processes and policies as opposed to educating students. The policies implemented by schools such as zero tolerance, suspensions, expulsions, and pressure to improve student test scores significantly contribute to the removal of students from school (Vega et al., 2015). The school to prison pipeline marginalizes at-risk students through increased dropout rates, truancy, and antisocial behaviors (Nelson, Jolivette, Leone, & Mathur, 2010). Virtual programs as educational options may support students to avoid the pipeline phenomena.

Despite the deficit perspectives addressed in research, many youth students of color demonstrate high resilience throughout pessimistic schooling experiences (Wyner, Bridgeland, & DiIulio, 2007). Boston & Ice (2010) noted learner persistence, the state in which learners continually participate in their education (Nora & Snyder, 2008), is an

essential factor for students enrolled in online education programs. Several notable school level positive factors that prevent youth discipline actions align to observed benefits of online learning for populations at risk of not graduating. Fewer rules, more positive adult interactions with students, and including students in making school policy decisions are but a few examples of the positive factors (Jackson & Hilliard, 2013).

Research of the literature suggests numerous academic predictors of success for African-American students. Carter & Wojtkiewicz (2000) determined the gender, and socioeconomic status of adolescents largely influences the student perception of the amount of support provided by the school and student perception of parental involvement. Of particular importance for Black students are the quality of relationships and student-belongingness.

Technology Experiences

The importance of technology for education grows exponentially and is a major catalyst behind the online transformation of education. The advancements and availability of technology [enhanced by the Internet] significantly influence [and provide options for] district planning for all students to succeed (Franco & Patel, 2011; Picciano & Seaman, 2007; Martindale, Carson, Curda, & Pilcher, 2005; Smith, 2009). The trends in education policy reflect the pressures placed on national, state, and local decision-makers to develop innovative solutions to decrease the achievement disparities. Picciano & Seaman (2007) suggest policymakers can influence and possibly accelerate online learning in K-12 schools.

Technology is at the forefront of online initiatives, but acceptance by students is essential to the success of virtual learning. Literature supports student online readiness as

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one of the predictive factors of success in blended learning (Graham, 2006). Researchers also note technology adeptness predicts course completion (de la Varre et al., 2014). A particular level of technical skills, including prior computer experience and knowledge to successfully participate in online learning, is expected (Baturay & Yukselturk, 2015). Neither understanding technology used in online course delivery nor re-creating the classroom in an online system isn't a significant indicator of student success. Successful student technological experiences with online coursework include developing a learning environment that both fosters success with appropriate pedagogy and technology (Perry & Pilati, 2011).

Stevenson (2013) reports vital facets of an online learning classroom that positively affect learner persistence are prior experiences with technology, the availability of technical support for instructors and students (Roby, Ashe, Singh, & Clark, 2013), combined with a user-friendly and accessible learning management system. Other researchers will argue digital literacy is a necessary component for success in the digital classroom.

Digital literacy has become a formal educational goal that is defined conceptually and composed of standardized operations (Knobel og & Lankshear, 2006). New technological advances in multimedia are transforming how students communicate and learn. Limitations in digital literacy and the lack of an understanding of norms and practices of appropriate usage complicate the ability of students to become competent scholars (Meyers et al., 2013). In 1997, Gilster (1997) introduced the term "digital literacy." He defined it as a set of information skills, far exceeding the basic literacy skills of reading, writing, listening, and speaking (Myers et al., 2013). According to

Gilster (1997), it is the ability to understand and use information in multiple formats from a wide variety of sources when it is presented via computers. Digital literate users require greater responsibilities necessary to apply literacy to text and multimedia information found on the Internet in a school-based learning environment (Gilster, 1997). Gilster (1997) identified four critical digital literacy components: knowledge, assembly, evaluating information content, searching the Internet, and navigating hypertext. The definition has since evolved Gilster's suggestion to acknowledge a participatory culture with indispensable skills to extract, organize, manage, present, evaluate and engage with information in virtual environments (Meyers et al., 2013).

Digital literacy continues to evolve and does not yet have a single, unified definition to describe it. Meyers et al. (2013) posit digital literacy through a lens that is multi-perspective to address the historical and scholarly foundations of its evolution. The three perspectives are described below:

1. **Digital literacy as the acquisition of "information age" skills.** Digital literacy describes abilities or behaviors displayed by digital information users. This perspective explains research and inquiry behaviors add quality value that enhances the ability to create and share information online, particularly in user-generated forums and social network sites. In a virtual learning environment, this translates to the ability to find, assess, and apply information for academic tasks. Often, youth are found to be deficient in this area, requiring intense training from librarians or other trained educators. Through this perspective, some may view youth as lacking the motivation to acquire the digital skills needed. Informal

learning vehicles, outside of the physical classroom, provide an alternate learning venue for youth to attain these skills and overcome the motivational challenges.

2. **Digital literacy as the cultivation of "habits of mind":** Digital literacy "emphasizes the application of abstract mental models to activities involving digital content," in other words, this perspective describes how individuals metacognitively process information. Metacognitive scaffolds promote reflective thought and heightened awareness of individual thinking on tasks or problems, allowing individuals to focus on problem-solving capacities. This perspective expects young scholars to perform at high levels, transferring knowledge and procedures from contexts and problems. This is an area youth are typically rated low in accomplishing. To enhance this skillset, informal context can support youth digital literacy development through problem-based challenges by practicing "habits of mind" in real-world scenarios.

Per Costa and Kallick (2000), the habit of mind describes a disposition toward behaving intelligently when confronted with problems. The authors further explain the habit of mind is comprised of several skills, including attitude cues, past experiences, and proclivities. A summary of the habits of mind are provided below (https://www.chsvt.org/wdp/Habits_of_Mind.pdf, retrieved April 28, 2019):

1. Persisting: Sticking to task at hand; Follow through to completion; Can and do remain focused.

2. Managing Impulsivity: Take time to consider options; Think before speaking or acting; Remain calm when stressed or challenged; Thoughtful and considerate of others; Proceed carefully.

3. Listening with Understanding and Empathy: Pay attention to and do not dismiss another person's thoughts, feeling and ideas; Seek to put myself in the other person's shoes; Tell others when I can relate to what they are expressing; Hold thoughts at a distance in order to respect another person's point of view and feelings.

4. Thinking Flexibly: Able to change perspective; Consider the input of others; Generate alternatives; Weigh options.

5. Thinking about Thinking (Metacognition): Being aware of own thoughts, feelings, intentions and actions; Knowing what I do and say affects others; Willing to consider the impact of choices on myself and others.

6. Striving for Accuracy: Check for errors; Measure at least twice; Nurture a desire for exactness, fidelity & craftsmanship.

7. Questioning and Posing Problems: Ask myself, "How do I know?"; develop a questioning attitude; Consider what information is needed, choose strategies to get that information; Consider the obstacles needed to resolve.

8. Applying Past Knowledge to New Situations: Use what is learned; Consider prior knowledge and experience; Apply knowledge beyond the situation in which it was learned.

9. Thinking and Communicating with Clarity and Precision: Strive to be clear when speaking and writing; Strive be accurate to when speaking and writing;

Avoid generalizations, distortions, minimizations and deletions when speaking, and writing.

10.Gathering Data through All Senses: Stop to observe what I see; Listen to what I hear; Take note of what I smell; Taste what I am eating; Feel what I am touching.

11.Creating, Imagining, Innovating: Think about how something might be done differently from the "norm"; Propose new ideas; Strive for originality; Consider novel suggestions others might make.

12.Responding with Wonderment and Awe: Intrigued by the world's beauty, nature's power and vastness for the universe; Have regard for what is awe-inspiring and can touch my heart; Open to the little and big surprises in life I see others and myself.

13.Taking Responsible Risks: Willing to try something new and different; Consider doing things that are safe and sane even though new to me; Face fear of making mistakes or of coming up short and don't let this stop me.

14.Finding Humor: Willing to laugh appropriately; Look for the whimsical, absurd, ironic and unexpected in life; Laugh at myself when I can.

15.Thinking Interdependently: Willing to work with others and welcome their input and perspective; Abide by decisions the work group makes even if I disagree somewhat; Willing to learn from others in reciprocal situations.

16.Remaining Open to Continuous Learning: Open to new experiences to learn from; Proud and humble enough to admit when don't know; Welcome new information on all subjects.

3.   **Digital literacy as engagement in digital cultures and practices:** Digital

literacy is engaging in practices that involve digital tools and media that are intertwined

within an activity. Technology is constantly changing; thus, the expectations and

capabilities of the users evolve to meet the demands of living, learning, and working in a

digital society. It is imperative to build the capacity of young scholars to find new ways

to participate in the digital culture through engaging informal contexts. The informal

contexts involve a complex cross-section of people, places, and technology (Meyers et

al., 2013). Informal learning contexts assist in developing structures to encourage

participation that leads to social learning and peer development (Smith & Hull, 2013) and

allows individuals to take charge of their development (Meyers et al., 2013). This

perspective does not place emphasis on skills, instead, on diverse contexts of use based

on communities of practice.

All in all, digital literacy is comprised of technological skills, critical thinking

skills, and context. Literacy extends beyond one's ability to read, write, speak, and listen

through printed communication. Per Adams and Hamm (2001), literacy involves

acquiring the specific mental skills necessary to "gather, decode, and assimilate internal

representations germane to each symbolic system." A digitally literate person is a

creative agent that participates with digital information becoming both a consumer and

creator of information, understanding their interactions exist within a socio-technical

network. The network is a space that joins learners together that allows an extension,

sharing, and learning (Meyers et al., 2013).

Schools continue to address the literacy needs of students based on the discourse

of the Industrial Age, traditionally utilizing print texts, traditional classrooms, and

methods of instruction (Winterwood, 2010). Digital literacy is multimodal, incorporating interactive learning through online instructional methods. Contemporary reading and writing are typically digitally mediated, involving various modes of communication, such as text messaging, images, video recordings, and audio recordings. As the modes of communication transition from print to digital, it is essential to prepare youth to become digitally literate within online environments. Youth culture demands education to shift from limiting education to a physical space and to expand learning to cyberspace to create more effective learning opportunities for students. Providing digital learning experiences and environments across curricula creates an education that is more dynamic and relevant to contemporary life (Winterwood, 2010).

Per Alkali & Amichai-Hamburger (2004), digital literacy is comprised of five complex skills. In their conceptual model, the authors discuss digital literacy as technical ability, emphasizing it is also comprised of cognitive and sociological skills. The five digital skills required for survival in digital environments are:

1. Photo-visual skills: The ability to intuitively and freely read and understand instructions and messages that are presented in a visual-graphical form. Scholars strong in this area usually have a good visual memory and strong intuitive-associative thinking.

2. Reproduction skills: The ability to create new meanings or new interpretations by combining preexisting, independent shreds of information in any form of media. Scholars strong in this area have good synthetical, and multidimensional thinking that helps in discovering new combinations for arranging information in new and meaningful ways.

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3. Branching skills: The ability to "branch" multidimensional thinking skills in constructing meaningful understanding of complex phenomena. Scholars strong in this area have good spatial-multidimensional sense of orientation to stay oriented and avoid getting lost in the hyperspace while navigating through complex knowledge domains.

4. Information skills: The ability to assess information by sorting out subjective, biased, or even false information, which will determine the quality of the conclusions, positions, opinions, or models that is constructed from the information. Scholars strong in this are critical thinkers, question information and make educated assessment of information.

5. Socio-emotional skills: The ability to share formal knowledge and emotions in digital communication. This is the most complex skill. Scholars strong in this area to have a good command of information, branching, and photo-visual literacy skills. They are willing to share their own data and knowledge with others, capable of evaluating data, possess abstract thinking and can design knowledge through virtual collaboration.

Based on the research conducted by Alkali & Amichai-Hamburger (2004), youth possess low levels of text reproduction literacy skills but are superior in photo-visual literacy skills. In terms of branching literacy, it appears this skill set diminishes with age. The results related to socio-emotional literacy skills were inconclusive.

Online Learner Characteristics

A broad range of characteristics has been proven predictors of success in online learning environments (Baturay & Yukselturk, 2015). Research indicates no single group

of factors exist to predict student attrition in online coursework (Gaytan, 2013). In fact, the variables leading to success were used in combination with other student variables (Roblyer et al., 2008). However, the literature reveals several common themes, including motivational factors, self-efficacy, personal factors, autonomy, academic achievement, access to support, age, and gender. Berger-Tikochinski et al. (2016), following a longitudinal study of one-to-one laptop learning environments, suggest student characteristics such as culture, age, and socio-economic status can significantly impact attitudes and achievement in these settings. Lee et al. (2013), studied students enrolled in online courses and reported students achieve better grades when they are given more autonomy for their learning.

Self-Regulation

The literature on academic achievement in the classroom highlights self-regulation and its associated strategies as one of the best predictors of academic success in educational settings (Zimmerman, 2002). The ability to self-regulate in an isolated online learning environment is vital for online learners (Baturay & Yukselturk, 2015). It serves as a critical feature of successful online learners (Franco & Patel, 2011). Self-regulation ascribes to the cognitive processes and physical behaviors that synchronize with attaining personal goals. Cognitive skills are indicative of an individual's learning ability. Strong cognitive skills correlate to fast and easy learning (Jackson & Hilliard, 2013).

Self-regulation plays a significant role in motivation and cognitive effort (Chen, Jones, & Moreland, 2017). Self-regulated students are active participants in the learning environment...often identified as the students displaying strong metacognitive strategies

such as planning, monitoring (Bradley et al., 2017). Metacognitive self-regulation describes the ability to self-evaluate, organize, transform, rehearse, memorize, self-monitor, seek information, and review information (Zimmerman, 1990). Thus, self-regulation is a crucial factor in online learning. Lee et al. (2013) studied students enrolled in online courses. These researchers found students with an external locus of control and/or low metacognitive self-regulation skills were more likely to fail at completing online course work.

Resource management is also a key component for students with high self-regulatory skills. It describes the ability to manage and control personal time and environment to achieve goals (Lee et al., 2013). Students with high self-regulatory skills typically set goals, monitor their learning experience, self-assess, are organized, and are self-motivated (Bradley et al., 2017). Strong self-regulatory skills have been proposed to correlate strongly with higher academic achievement because of the ability to better control study habits. Further, Bandura (1997) suggests individuals with high self-regulation and high self-efficacy correlates with favorable educational outcomes. Zimmerman (2002) provides the following suggestions for self-regulated learning:

a. Setting specific proximal goals for oneself,

b. Adopting powerful strategies for attaining the goals,

c. Monitoring one's performance selectively for signs of progress,

d. Restructuring one's physical and social context to make it comparable with one's goals,

e. Managing one's time use efficiently,

f. Self-evaluating one's methods,

g. Attributing causation to results, and

h. Adapting future methods. (p. 66)

Bandura's model suggests personal factors and the environment both influence and is influenced by one's behavior. Bandura (1977) identified self-efficacy as a necessary component for self-regulation. Self-efficacy is the result of a host of personal life events, physiological and emotional states, thereby determining one's goals and aspirations (Bradley et al., 2017). Bandura (1997) defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments." Essentially, self-efficacy is the belief an individual possesses in their capability to successfully perform a task (Bandura, 1997). According to Joo, Bong, & Choi (2000), in a study on Web-based instruction, self-efficacy and self-regulation cooperatively influence academic achievement. However, it is context-dependent. One such example of the relationship between self-efficacy and academic achievement comes from a study performed by Kupczynski, Brown, Holland, & Uriegas (2014). The researchers found interactions existed with the student characteristic gender and students earning higher GPAs, citing self-efficacy as a personal factor that may influence online course success. Chyung (2007), based on research, reported females to have lower self-efficacy toward computers than males. Ausburn, Martens, Washington, Steele, & Washburn (2009) reiterates technology self-efficacy when compared to gender differences in digital learning spaces might be related to varied experiences and perceptions of virtual technologies.

Efficacy beliefs determine how environmental opportunities and obstacles are perceived and affect choice of activities, the amount of effort that is given to an activity,

and how long people will persevere when faced with difficulties and failures (Bandura, 1997). Bandura (1977) found self-efficacy beliefs are powerful indicators of future behavior. Liaw (2008) determined through an online model, learner's self-efficacy as the most significant contributor to student satisfaction and online course retention. He explained, knowledge and action are mediated by a person's belief in their capabilities to put the acquired skills to use. Students with high self-efficacy may choose to perform more challenging tasks and to set themselves higher goals, such as inquiry and hands-on learning activities (Bandura, 1997). College students with higher self-efficacy, as it is related to online educational research, are reported to have proficient self-regulatory skills (Bradley et al., 2017).

McCoy (2010) suggests undergraduate student's that frequently engage with technology, specifically computers and the Internet, have higher self-efficacy. In a research study exploring gender differences in E-learning across communication, social presence, and learning outcomes, Johnson (2011) found general computer self-efficacy (GCSE) was influential in virtual learning, though it was not the main focus of the study. The researcher noted GCSE was associated with the perception of instrumentality. This finding suggests students with higher GCSE find more value in the online course. The formation of self-efficacy beliefs is influenced by four sources of information: enactive mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states (Bandura 1997).

Mastery experiences are most influential because they provide teachers with concrete and authentic evidence of their ability to execute a specified task. Other experiences people rely on to construct self-efficacy beliefs are vicarious. Vicarious

experiences provide opportunities to observe specific tasks modeled. Verbal persuasion refers to others feedback to strengthen people's beliefs in their capabilities (Brown, 2012). The final source of self-efficacy beliefs stems from physiological and emotional reaction experiences. Physiological experiences refer to physical reactions to stress, such as increased heart rate and sweaty palms. The emotional response refers to one's ability to remain calm or experience heightened anxiety. This influence on efficacy beliefs depends largely on how these reactions are interpreted (Bandura, 1977). All in all, high self-efficacy significantly impacts one's ability to function optimally (Bandura, 2002).

Motivation for Academic Achievement

Cognitive factors such as achievement motivation and locus of control contribute to success in learning environments (Roblyer et al., 2008). Locus of control describes one's internal beliefs related to outcomes of events that may be experienced. It is the degree of control to which an individual attributes the outcome to an event (Rotter, 1966). An individual with an internal locus of control tends to believe the outcomes of events are associated with the individual's decisions and efforts. Meanwhile, an individual with an external locus of control believes the outcomes are out of their personal control or dependent upon some external circumstance (Lee et al., 2013). Research on the locus of control indicates students with an internal locus of control are more self-motivated, self-directed, and will achieve higher in online courses (Chang & Ho, 2009; Liu, 2002).

Motivation, defined as the process whereby goal-directed activity is instigated and sustained, is a pertinent quality that permeates all student activities (Schunk et al., 2008). Per (Schunk, Pintrich, & Meece, 2008), motivation involves goals and requires either physical or mental activities that will sustain action. The term motivation misleads us to

think it is always positive. In actuality, there are forms of motivation that are healthy and other forms that are unhealthy. Healthy motivation acknowledges the motivation that develops long-term development in meeting human's basic psychological needs, including autonomy, competence, and relatedness, while unhealthy motivation may drive humans to act. Unfortunately, unhealthy motivation may undermine the goal of meeting basic needs (Wheatley, 2012).

Deci & Ryan (1985) works on autonomy and the self-determination theory describes human behavior is linked to various forms of motivation. The authors further describe students need autonomy when they encounter tasks that warrant some levels of control and choice. The key components of the self-determination theory model are autonomy, competence, and relatedness (Gaytan, 2013). Researchers, Chen and Jang (2010) tested the self-determination theory on two online programs. Their findings revealed autonomy significantly supported competency in the online setting. Chen and Jang (2010) found self-determination should be presented to online learners as an "attractive" characteristic that allows the students to achieve higher success in online courses, thus, serving as an intrinsic motivational factor.

It should be noted, adult education researchers express in the literature, children are not ready to assume high degrees of autonomy (Barbour & Reeves, 2009). High attrition rates are correlated with low levels of autonomy, because students are expected to take ownership of learning in online coursework. In fact, (Perry & Pilati, 2011) reports, "Online learning requires students to be more self-motivated than traditional students." In a review of literature related to online completers, Waschull (2005)

reported self-discipline and motivation are significantly correlated with online course grades.

Intrinsic motivation is a crucial feature of healthy motivation. Intrinsic motivation means one is motivated to naturally learn or do something because of personal interest, curiosity, or consistency with personal values. Intrinsic motivation focuses on the personal satisfaction of individual experiences related to the execution of particular behaviors and engagement (Brown-Wright & Tyler, 2010). Researchers have found that high levels of intrinsic motivation are positively associated with academic persistence (Vallerand and Bisonette, 1992) and with academic self-concept for African-American college students (Cokley, 2003). In this sense, motivating youth to become successful online learners involve creating opportunities where the students believe some outcome will accrue from this behavior (Deci & Ryan, 1995). Self-motivation is enhanced when coupled with self-regulation, self-efficacy, and intrinsic interest (Bradley et al., 2017). Black males are credited with persistence as a strategy to counter the toxicity of negative influences and expectations (Rhoden, 2017).

Extrinsic motivation centers on reaching goals that are regulated through rewards and constraints. In other words, the behavior is internalized by external variables (Brown-Wright & Tyler, 2010). Extrinsic motivation refers to the notion to learn or do an activity to receive something. According to Wheatley (2012), an emphasis on extrinsic motivators is counterproductive. For extrinsic motivation to work as a motivator for high school students, the expected behavior must be explicit and delineate what outcomes will result from critical reflection (Deci & Ryan, 1995). In terms of internal and external factors, significant differences were found between persistent

learners and dropouts as it relates to student retention in online courses (Gaytan, 2013).

Research indicates the motives of online learners can be categorized as either intrinsic or

extrinsic and serve as accurate predictors of student success and persistence in online

learning environments (Baturay & Yukselturk, 2015). Lee et al. (2013) conducted an

investigation examining the differences between persistent and dropout students enrolled

in online coursework. The researchers found the academic locus of control and

metacognitive self-regulation for learning are critical factors that influence the dropout of

students. They further suggest students with an external locus of control and/or with

insufficient metacognitive self-regulation skills are more likely to drop out of online

courses.

Another consistently healthy behavior is the belief that intelligence or ability is

something that can be improved with effort, while believing the opposite is

counterproductive (Wheatley, 2012). This precisely leads to the work and research of

Carol Dweck related to mindsets and implicit theories. Based on research conducted by

Carol Dweck, people may have a fixed mindset or a growth mindset (Dweck, 2009). The

impact of one's mindset leads to implicit theories about the malleability of human

characteristics such as resiliency, academic ability, and social ability (Yeager & Dweck,

2012). The entity theory is like a fixed mindset, meaning things are as they are and

limited to change. The incremental theory is similar to the growth mindset, indicating

things can change over time and are not fixed (Chen & Pajares, 2010).

To apply this concept to the development of a successful online learning mindset,

the students need to develop or adapt to an incremental view of mindset. Approaching

goal setting through a growth mindset opens the door to higher achievement. As one

grows in ability and belief in setting goals, he/she is more receptive to selecting a model for reflection, receiving instruction on the reflection process, and providing more in-depth levels of reflections (DoR). With greater DoR, the likelihood of effecting change or transforming the learning process online heightens.

Student motivation significantly impacts student success in online courses. Findings from collegiate level massive open online courses (MOOC) research demonstrate motivational factors are important determinants of positive course outcomes in online settings (Tawfik, Reeves, Stich, & Gill, 2017). Self-regulation profoundly impacts motivation, as it causes one to plan, monitor, and modify behaviors (Bradley et al. 2017; Pintrich & De Groot, 1990). Setting personal planning goals, realistic goals, accepting personal responsibility for actions, and developing self-confidence are practices shown to improve individual autonomy (Woolfolk, 2007). Achieving challenging goals in pursuit of school success requires strong levels of psychological attributes (Ivcevic & Brackett, 2014). The authors investigated the validity of self-regulation predictors: conscientiousness, grit, and emotion regulation ability (ERA) in a study of high school students attending private schools. They concluded grit, a combination of passion or consistency of interests and persistence, is expected to be the most important construct for goal attainment when individuals have a substantial choice in the matter. Conscientiousness and ERA were found to be predictors of school outcomes, while grit was not.

Age and Gender Differences

Given the significant changes influenced by technology within the landscape of education, learner characteristics of gender and age are of great importance. Brick and

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mortar classrooms are shaped by the politics of gendered [and age-related] differences (Maher & Hoon, 2008). Several theoretical models have been used to investigate the moderating effects of age and gender in technology-dependent environments. The Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM) are fundamental models used to explore the acceptance of technology amongst users in relation to age and gender.

UTAUT, presented by Venkatesh, Morris, Davis & Davis (2003), proposed a unified model composed of eight prominent models in IT acceptance research (Wang, Wu, & Wang, 2009). The first model is the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1977). This is an influential theory on human behavior, utilizing attitudes toward behavior and subjective norms as the core constructs. The second theory is the Technology Acceptance Model (TAM) (Davis, 1989), predicts Information Technology (IT) acceptance and usage on the job by exploring perceived usefulness, perceived ease of use and attitudes towards usage of technological systems as three constructs (Wang et al.,2009; Goswami & Dutta, 2016). Venkatesh and Davis (2000) revised TAM, presenting TAM2, which added subjective norms (Wang et al.,2009), including social influence and cognitive processes (Padilla-MeléNdez et al.,2013). Currently, TAM utilizes perceived usefulness and perceived ease of use as the two primary predictors of effective acceptance and use. The third model is the Motivational Model (MM) (Davis et al.,1992), or TAM2, which focuses on understanding the motivation theory to understand the acceptance and use of technology. The primary constructs are extrinsic and intrinsic motivation. The fourth model is the Theory of Planned Behavior (TPB) (Ajzen, 1991), which is an extension of the TRA model. In this model, the construct of perceived

behavioral control was added. The next model is a hybrid model, the Combined TAM and TPB (C-TAM-TPB) (Taylor & Todd, 1995). The sixth model, the Model of PC Utilization (MPCU) (Thompson et al., 1991), consists of six constructs including job fit, complexity, long-term consequences, affect towards use, social factors, and facilitating conditions. The next model is the Innovation Diffusion Theory (IDT) (Moore & Benbasat, 1991), adapted relative advantage, ease of use, image visibility, compatibility, results in demonstrability, and voluntariness of use as constructs. The last model included in UTUAT is the Social Cognitive Theory (SCT) (Compeau & Higgins (1995). This model consists of five constructs to explore technology usage and acceptance. They are outcome expectations-performance, outcome expectations-personal, self-efficacy, affect, and anxiety.

Wang et al. (2009) modified the UTAUT model, incorporating performance expectancy (PE), effort expectancy (EE), social influence (SI), perceived playfulness (PP), and self-management of learning (SL) as determinants of behavioral intention and gender and age as moderators. The researchers found each of the determinants for behavior intention was significant for females with the exception of social influence. The age groups older than 30 years of age and younger than 30 were significant for all determinants, while SI was significant for the younger group. Age differences moderated the effects of EE and SI on behavior intention, supporting prior findings that these determinants are strong predictors of usage intention for older people. SI was found to be significant for men, contradicting other findings supporting SI as a strong predictor for usage for females. This research also found SL was significant for females. Khechine et al. (2014) also utilized the UTAUT model to investigate the role of gender and age in a

blended learning setting. These researchers used behavior intention as the dependent

variable. Four independent variables were included in the study-PE, EE, SI, and

facilitating conditions (FC). Gender and age were added as moderating effects. The

results show younger students were more concerned with PE, while older students were

more concerned with FC. The researchers reported EE was not a concern for students in

the blended setting; however, the expectancy of performing better incited younger

students to use the blended system. Gender had no moderating effects on technology

usage.

TAM is considered appropriate by some authors and researchers to predict student

satisfaction in blended learning environments, where age and gender can be investigated

as moderators in the model (Park, Kim, Cho, & Han, 2019; Goswami & Dutta, 2016;

Padilla-MeléNdez, Aguila-Obra, & Garrido-Moreno, 2013). Padilla-MeléNdez et al.

(2013) used the TAM model to investigate gender differences according to the intention

to use a blended learning system. The researchers found female perceived ease of use is

a critical factor in the acceptance of use of blended learning system. The reported

findings from the study were female perceptions of playfulness and attitude were higher

than males. However, the males in this study intended to use the blended learning system

more than females.

Interestingly, the researchers suggested practitioners give extrinsic and intrinsic

motivational factors when designing blended learning systems. These authors further

contend men are found to be more technologically adept compared to females. Islam

(2011) used TAM to study gender differences in students in Malaysian universities and

reported females face technical barriers in understanding E-learning systems. In

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Singapore, Liaw and Huang (2011) found male students were more positively likely to use E-learning than female students at the university level. Similarly, Milis, Wessa, Poelmans, Doom, & Bloemen (2008) found undergraduate female students found the new virtual learning systems to be complicated and learning the latest technology depended on perceived usability.

Females face immense disadvantages when compared to men (Goswami & Dutta, 2016). In an analysis of historical trends utilizing data from the U.S. Census, explicitly exploring the gender gaps in time towards completion of a four-year degree, McDaniel et al. (2011) discovered female advantages occur at various transitional points-high school being a transition point. Amongst Black and White students, females are less likely to drop out of school. After students drop out of high school, males are more likely to earn a GED than females. González-Gómez, Guardiola, Rodriquez, & Alonso (2012) conducted a study to determine if gender differences existed in E-learning and reported females display a higher degree of satisfaction than male students. Black males generally lag behind Black females in many educational outcomes, not excluding high school graduation, attending college, and completing college (McDaniel et al.,2011).

Goswami and Dutta (2016) reported mixed results of the influence of gender on technology adoption after reviewing the related literature. Gender research identified more females are enrolled in e-learning course work (Johnson, 2011). Based on research conducted by Chyung (2007), a disadvantage for older students is that they tend to be less competent computer users, and females experience less self-efficacy toward computers than males. Johnson (2011) conducted a study to investigate gender differences in E-learning and suggested, despite the disadvantages experienced by females in virtual

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learning spaces, communication in digital learning spaces is an advantage for females. Communication tools are more valued by female students. This is supported in the research conducted by González-Gómez et al. (2012). These researchers found female students assign great importance to planning and participating, are better prepared, organized, participative, and engaged in the learning process. Females in this study also preferred more presentations, whereas the males preferred fewer presentations. This may indicate the presentations served as vehicles of communication.

On the other hand, males were not as concerned with these concepts but were more interested in the pacing of the course. Ausburn et al. (2009) found based on research, men preferred interactive virtual experiences more than females. Aragon and Johnson (2008) found females are more likely to complete online coursework, but no significant difference was found to correlate with academic readiness or self-directed learning.

Based on the Gender Role Theory (Eagly, 1987), females are interested in the communal aspects of communicating, including developing social relationships. When Gender Role Theory is applied to virtual learning settings, females are expected to be interested in creating and maintaining relationships to maintain community and connections. Interactions in a shared social space are a potential barrier to learning in digital settings, where the two critical aspects of communication are interaction and social presence (Johnson, 2011). In virtual learning spaces, interactions take place asynchronously and synchronously. For example, asynchronous interactions include tools such as discussion threads and synchronous tools, such as the chat room, to create interactive spaces for learning and communicating. In an E-learning space, social

presence is referred to as the extent to which learners perceive the technology as useful for creating a socially connected environment (Johnson, 2011). Johnson (2011) suggests males and females interact differently in E-learning environments. This researcher emphasizes females possess strong virtual communication skills because they are network focused, leading to enhanced interactions and peer connections. This is supported by Chyung (2007), who indicates females display more social behaviors online. Through interactions and relationships, individuals are less isolated when actively engaged.

Kupcyzynski et al. (2014) investigated the relationship between the final grade received in an online course compared with gender. The results in this study found interactions existed between gender and overall GPA. Most interesting is that the differences existed only for students with lower GPAs. Female students scored higher than male students amongst the students with lower GPAs. Additional findings include, female students are more likely to collaborate with, interact with, and seek assistance from fellow students, especially following a positive initial encounter. Male student interactions are more likely competition based. The supportive and connected learning of females may contribute to achieving higher GPAs amongst lower GPA groups.

Concerns with online readiness arise for high school students, where social and emotional development are pivotal (Ben-Zadok, Leiba, & Nachmias, 2010). Skills such as time management, self-motivation, self-regulation, autonomy, ability to work independently, and goal-setting are often under-developed for secondary students. Readiness to learn independently online requires these proficiencies and many more. Cavanaugh (2005) emphasized younger students need more scaffolding in virtual

learning course work. In a study investigating online learning behaviors of students in

grades 3-6, Ben-Zadok et al. (2010) found significant differences existed across ages.

The author's findings indicate younger students learn more over extended periods of time,

while older students completed more assignments. Further, differences in the way they

learn were not present. Time-related variables differed, which supports findings

Cavanaugh, Barbour, & Clark (2004) reported, that younger students are not ready for

autonomous learning. Learning to manage time is critical for online success.

Retention studies found age as a predictor of success. James, Swan, & Daston

(2016) performed research to investigate the success of online students attending

community colleges, 4-year universities, or working primarily online. They reported no

differences in success based on gender, but age greatly influenced student retention, as

older online students were retained at higher rates. The researchers further suggested,

older students may have a greater need for the classes they attempt. Contrary to the

success of online students, younger students completing face-to-face courses were

retained at higher rates than older students in face-to-face courses. Thus, suggesting the

mode of instructional delivery may influence online success for different age groups.

Contrary to the findings of James et al. (2016) investigation, other researchers

report empirical research does not support older students as having higher retention rates

(Cochran, Campbell, Baker, & Leeds, 2014). Age may be viewed as a risk factor for

withdrawal from online courses, as responsibilities increase with age (Cochran et al.,

2014). However, Cochran et al. (2014) reported students classified as seniors were less

likely to withdraw from online classes than non-seniors after conducting a study to

examine how individual student characteristics were associated with withdrawal from online coursework in higher education settings.

It is more difficult to predict the outcomes based on demographic variables, such as gender and age, without full awareness of the context and tasks involved in the coursework. Stratton, O'Toole, & Wetzel (2007) suggest interactions exist between age and gender. Therefore, patterns of effects are more complex. Brown and Czerniewicz (2009) suggest complexities in researching gender and age differences may be highly context-dependent. Brown and Czerniewicz (2009) also indicate gender differences intersect and must be interpreted with other factors such as socio-economic group, language, culture, and discipline. In applying the theories and findings of this section, we can assume students in upper-grade levels will be more successful than those in lower grades when learning online. Research supports older students are more successful than younger students, likely due to prior academic experiences, goals, and obligations. Does virtual programming remove critical factors negatively influencing gender-based experiences in traditional learning settings? And, will it improve student achievement?

CHAPTER III

METHODOLOGY

Introduction

The research about the effectiveness of online learning for K-12 students is limited. The literature review describes the advantages and disadvantages, predictors of success, and various learner characteristics. However, much of the research has been conducted to examine online learning in higher education settings. To address the gap in the literature of online learning as it is related to high school students, this quantitative study explored the population of students enrolled in high school online learning programs in Northeast Ohio to identify determinants related to successful course completions.

The research methods and procedures exercised to collect and analyze data to determine the completion percentages of high school students enrolled in online courses are explained in this chapter. Specifically, this chapter outlines a brief purpose for this research, the research questions and hypotheses, a detailed description of the high school demographics recruited for this research, the methods of data collection, the quantitative research design, and the data analysis procedures.

Purpose

American public schools are significantly increasing the use of online learning (U.S. Department of Education, 2012). The need to provide accommodations for various learning styles and student personal and social circumstances has contributed to its expansion (Koh et al., 2010). As documented in the literature, the achievement gap remains a concern, and graduation rates remain at the forefront for policymakers and stakeholders (Neblett, Jr., et al., 2009). Subsequently, this investigation sought to explore data to examine the characteristics of secondary students who successfully complete online coursework. Further, this research explored the differences in online academic achievement based on differences in gender, race, grade level, and grade level according to expected age.

Research questions and Hypotheses

The research questions and hypotheses guiding this investigation are as follows:

RQ1: Is there a statistically significant difference between male and female students in grades 9-12 in online course completion percentage?

H_0: There is not a statistically significant difference between male and female students as it relates to online course completion percentage.

H_1: There is a statistically significant difference between male and female students as it relates to online course completion percentage.

RQ2: Is there a statistically significant difference between Black and Non-Black students in grades 9-12 in online course completion percentage?

H_0: There is not a statistically significant difference between Black and Non-Black students in grades 9-12 as it relates to online course completion percentage.

H₁: There is a statistically significant difference between Black and Non-Black students in grades 9-12 as it relates to online course completion percentage.

RQ3: Is there a statistically significant difference based on grade level for students in grades 9-12 in online course completion percentage?

H₀: There is not a statistically significant difference based on grade level for students in grades 9-12 as it relates to online course completion percentage.

H₁: There is a statistically significant difference based on grade level for students in grades 9-12 as it relates to online course completion percentage.

RQ4: Is there a statistically significant difference based on whether or not a student is classified in the correct grade according to age in online course completion percentage?

H₀: There is not a statistically significant difference based on whether or not a student is classified in the correct grade according to age in online course completion percentage.

H₁: There is a statistically significant difference based on whether or not a student is classified in the correct grade according to age in online course completion percentage.

Description of Participating High Schools

Four school districts agreed to participate in this study. Each district is an inner-ring suburban school district in Northeast Ohio, with an urban city boundary. Each recruited district offers one high school for the community in which students can walk to. The number of students enrolled in each high school ranged from 219 students to 1,074 students. In terms of racial distribution, no calculations are reported for groups with fewer than ten students. Subsequently, no calculations were reported for migrant, American Indian or Alaskan Native, and Asian or Pacific Islander students across the populations for all four districts. High schools A and D reported enrollment data for

Hispanic and Multiracial students, while the others did not report enrollment for these

subgroups (see table 1).

Table 1. Summary of Ohio school report card enrollment data for 2018-2019

High School	All students	American Indian or Alaskan Native	Asian or Pacific Islander	Black, Non-Hispanic	Hispanic	Multiracial	White, Non-Hispanic	Economic Disadvantage Percent
School A	1074	NC	NC	786	26	61	191	64
School B	219	NC	NC	196	NC	NC	11	63
School C	726	NC	NC	721	NC	NC	NC	98
School D	1012	NC	NC	843	34	50	82	57
Total	3031			2546	60	111	284	282

Notes. If enrollment is less than 10, results are not calculated (NC).

Table 2. Summary of Ohio school report card ratings for 2018-2019

High School	Overall	Achievement	Progress	Gap Closing	Graduation Rate	Preparedness for Success
School A	C	F	A	D	C	F
School B	D	D	C	C	D	F
School C	F	F	D	F	F	F
School D	D	F	D	F	C	F

In the state of Ohio, schools are measured on the Ohio State Report Card across

six components, including achievement, progress, gap closing, graduation rate, improving

at-risk K-3 readers, and preparedness for success (Ohio State Report Cards, n.d.). Data

from the 2018-2019 Ohio State Report Card, excluding the K-3 component, is used to

describe the recruited high schools from the participating school districts in this study.

The Ohio State Report Card provides an overall score that is determined based on the six

components using an A-F grading scale. The enrollment information was collected from

the state report card data also.

Collectively speaking, High school A received the highest ratings from the state

of Ohio based on the high schools included in this investigation. High school A served

1074 students in 2018-2019, where 73 percent of the population documented were Black,

Non-Hispanic, and 64 percent of the total population was identified as economically

disadvantaged. High school A had the largest total school population of the schools

examined for this research, including 2 percent that was Hispanic and 6 percent were

classified as Multiracial students (see table 1). The high school earned a "C" rating in the

categories of overall school rating and graduation rate.   In the components of

achievement and preparedness for success, the state assigned the high school an "F"

rating. Ironically, High school A was rated as an "A" in the progress component but

scored a "D" in the component of closing the gap (see table 2).

The high school with the smallest enrollment in this investigation is High school

B, reporting 63 percent of the population were economically disadvantaged. The state of

Ohio reports this school served 219 students in 2018-2019, with 89 percent of its

population categorized as Black, Non-Hispanic. Another 5 percent were classified as

White, Non-Hispanic (see table 1). The report card rated High school B overall as a "D"

rating. The high school also scored a "D" in the areas of achievement and graduation

rate. A rating of "C" was given in the components of progress and gap closing. This high school is also rated "F" in the final category of preparedness for success (see table 2).

The high school with the greatest failing marks in this study is High school C, with a total enrollment of 726 students. The total population for this school was 99 percent, Black, Non-Hispanic students, with a reported economic disadvantage of 98 percent (see table 1). High school C earned an "F" rating in every component, except for the progress component. For the progress component, High school C earned a rating of "D" (see table 2).

High school D reportedly has the second largest total high school population of the recruited districts for this study, with a total of 1,012 students. The state of Ohio reports this high school categorized 83 percent as Black, Non-Hispanic, 3 percent as Hispanic, 5 percent as Multiracial, and 8 percent as White, Non-Hispanic. This high school also reported the lowest economically disadvantaged population of 57 percent (see table 1). Overall, High school D earned a rating of "D," and the same rating in the progress component. in achievement and graduation rate components. Similar to High school C, this high school scored an "F" rating in the achievement gap closing and preparedness for success components. However, High school D received a "C" in the area of graduation rate (see table 2).

Data Collection Procedure

Following the approval from Cleveland State University Institutional Review Board (IRB), the researcher contacted the school districts to request access to archival data. Archival data refers to data previously collected by the school district (Lodico et

al., 2010). The researcher requested data for high school students, grades 9-12, currently or previously enrolled for at least one online course. The targeted districts were inner-ring suburban school districts in Northeast Ohio with an urban boundary. The criteria for students to be included in the analysis are previous and current enrollment in online courses provided by the district. The courses were either completed independently, in a classroom setting, or in a blended learning environment provided by their school district. In the blended context, there are several classroom conditions used by districts (e.g., part-time on-campus, off-campus brick and mortar sites, etc.). There is neither a specific target for the provider of the online courses nor the delivery method. The target is simply enrollment in online coursework for at least part-time status.

A minimum sample of approximately 175 students was expected to have been recruited based on a power analysis for the study. A power analysis of this sample size indicated an estimated power of .96, which is above the typically accepted rule of thumb. The actual sample totaled 215 subjects, exceeding what was needed to perform the investigation. Ultimately, the data of 214 subjects was analyzed because the grade level for one student was omitted from data. Therefore, that student data was not included in the analysis.

Quantitative Research Design

A descriptive comparative research design was utilized to describe differences between the subgroups determined for this study as gender, race, grade level, and grade level according to expected age. This design strategy does not support the researcher in making inferences or establish a causal relationship. The data is collected, and the findings are interpreted by the researcher to report differences for the groups (Lodico et

al., 2010). The descriptive comparative design is an effective approach to collect descriptive data for analysis and group comparisons. Therefore, this design is appropriate for this study to explore the differences in completion percentages for online high school learners.

Archival data, previously collected by the school district, was requested for this study. The data was entered into the Statistical Package for the Social Sciences (SPSS) version 25. The data was cleaned methodically using the same system. First, missing data was addressed using listwise deletion. Listwise deletion is the most frequently used method in handling missing data and thus has become the default option for analysis in most statistical software packages (Kang, 2013). Next, the variable names were systematically ordered to ensure that the statistical analyses can be conducted most efficiently. Each observed variable, items on measures the participants respond to, was summarized in SPSS to test the mean, standard deviation, skewness, kurtosis, and to check for any potential outliers. There were no outliers in the data, which fit into a normal distribution. Therefore no further actions (i.e., data transformations) were taken.

For this quantitative study, the variables of interest for this investigation included gender, race, grade level, grade level classification according to expected age, and online course completion percentage. The first question was designed to investigate whether gender differences exist in completion rates amongst students in grades 9-12 passing online courses. The gender variable was coded as binary where 0 = "female" and 1 = "male". Completion percentages for males and females were compared, controlling for age.

The second question was designed to investigate whether statistical significance exists in completion percentages when high school Black students were compared to Non-Black students. The race variable was coded as binary where 0 = "Black" and 1 = "Non-Black". Completion percentages for Non-Black students were compared with Black students, controlling for age and gender.

The third question examined the student completion rates based on the reported grade levels. The grade level variable is categorical and included the categories of 9th grade and 10th grade combined to create the category "underclassmen", and 11th grade and 12th grade combined to create the category "upperclassmen." The upperclassmen category included all students classified in the11th and 12th or more year of education. The completion percentages for underclassmen were compared with the upperclassmen, controlling for gender.

Question four investigated the completion percentages of students based on grade level classification according to expected age. The grade level according to expected age is coded as binary where 0 = "expected" and 1 = "unexpected." The completion percentages for students classified in the grade level for their expected age were compared with those that were not, controlling for gender and age. Students were coded as being in the grade according to the expected age if they are 14 or 15 in the 9th grade, 15 or 16 in the 10th grade, 16 or 17 in the 11th grade, and 17 or 18 in the 12th grade (see table 5). If the student was any other age, they were coded as being in the unexpected grade based on their age. The course completion percentage was calculated by dividing the total number of credits successfully completed by the total number of credits attempted.

Data Analysis Procedures

All four hypotheses were tested using standard linear regression, with gender, race, grade level, and grade level according to expected age as the independent variables, respectively, and completion percentage as the dependent variable. Based on the available data, control variables were entered into the regression equation.

The regression models are best represented by the following generic equation:

$$y = \beta_0 + \beta_1 x_1 + \varepsilon$$

where y represents course completion percentage, x1 represents either gender, race, grade level, or grade level according to expected age, and ε represents the error term. The various estimated models controlled for student age, and gender. We rejected the null hypotheses for RQ1, RQ2 and RQ3 as they were found to statistically significant (P ≤ 0.05). Research question II was not statistically significant, however, so we failed to reject the null hypothesis (P ≥ 0.05). However, RQ2 is determined to have practical significance. Further details of the data analysis will be presented in Chapter IV.

CHAPTER IV

RESULTS

This research addresses the gap in the literature related to high school online

learning. This quantitative study explored the population of high school students enrolled

in virtual learning programs in Northeast Ohio to determine differences that exist

amongst students successfully completing digital course work. The goal of this study

was to investigate student course completion percentages of attempted credits while

enrolled in E-learning courses. The purpose of this chapter is to present the results of the

investigation. First, a brief discussion of the demographics of the participating school

districts and high schools will be reviewed. Next, the results of the quantitative analysis

will demonstrate support for or refute the hypotheses, corresponding to each of the posed

research questions. A summary of the results will conclude the chapter.

Description of the Sample

The sample for this study was drawn from inner-ring suburban school districts in

Northeast Ohio with an urban boundary. The subjects of this study include high school

students, grades 9-12, enrolled in online courses pursuing credits toward high school

completion. The criteria for students to be included in the analysis were previous or

current enrollment in at least one online course. The courses were either completed independently, in a classroom setting, or in a blended learning environment provided by their school district. The provider of the online courses and the delivery methods were not controlled for in this study. The target is simply enrollment in online coursework for minimally one course.

Table 3. Grade level classification according to expected age

Grade Level	Age groups	(n)	Percentage
9	14-15	58	27
10	15-16	58	27
11	16-17	34	16
12	17-21	63	29
Total		214	

Table 4. Description of participants based on race and gender

Gender/Race	(n)	Percentage
Black males	93	43
Black females	101	47
Non-Black males	12	6
Non-Black females	9	4
Total	215	

Table 5. Number of students in lower grade level according to expected age

Grade Level	(n)	Overage (n)	Percentage of Overage compared to total (N)
9	58	41	19
10	58	33	15
11	34	19	9
12	63	19	9
Total	214	112	

Table 6. Description of participants on race, gender, and grade level according to expected age

Gender/Race	Expected grade level	Unexpected grade level	Unexpected grade level percentage
Black males	34	58	27
Black females	58	43	20
Non-Black males	5	7	3
Non-Black females	4	5	2
Total	101	113	

The sample for this study was drawn from the larger population of four inner-ring suburban school districts with an urban boundary in Northeast Ohio. The students who participated in online courses were drawn from the district's only high school. The subjects of this study consisted of students in grades 9-12. The subjects were enrolled in one or more online courses, currently or in the past. The sample (n) was a total of 215 students, including 105 males and 110 females (see table 4). Within the sample, the ages

ranged from 14-21 years of age (see table 3). The grade level for one student was unknown, and subsequently, it was omitted from the data during the analysis. There was one student, age 21, in the sample. Of the remaining subjects, 58 (27%) were in the 9th grade, 58 (27%) were in the 10th grade, 34 (16%) were in the 11th grade, 63 (29%) were in the 12th grade as shown in Table 3. Student grade levels are assigned based on earned credits within the school data, not years of attendance or age. For example, an 18-year-old or fourth-year student could be classified as a 9th-grade student based on the number of credits earned.

Further inspection of the sample shows us that Black males represented 43% of the sample, with 93 enrolled. At the same time, Black females accounted for 47 percent of the sample, with 101 participating in online course work. Collectively, Nonblack males and females accounted for just 10 percent of the sample population, with 12 males and nine females (see table 4). The underclassmen in this sample who were over-aged and under-credited, represented 34 percent of the total population, while just 18 percent were upperclassmen. Overall, 52 percent of the sample population represented students at risk of not completing high school (see table 5). 58 Black males and 43 Black females represent 47 percent of the total population classified in grade levels lower than expected for the student age. Just 5 percent of the data was represented by the Nonblack males and females classified in unexpected grade levels (see table 6). There were no students classified in grade levels above the expected age in this sample.

Quantitative Analysis

All four hypotheses were tested using standard linear regression, with gender, race, grade level, and grade level according to expected age as the independent variables,

with completion percentage as the dependent variable. Control variables were entered into the regression equation. The various estimated models entered control variables for age and gender. In this sample, there were a total of 10 students between the ages of 19-21, with one student 21 years of age. The student with no reported grade level was removed from the sample. To analyze RQ3 and RQ4, grade levels were coded as being in the correct grade level according to expected age if they were 14 or 15 in the 9th grade, 15 or 16 in the 10th grade, 16 or 17 in the 11th grade, and 17 or 18 in the 12th grade (see table 3).

Research Question 1: Gender

RQ1: Is there a statistically significant difference between male and female students in grades 9-12 in online course completion percentage?

H$_0$: There is not a statistically significant difference between male and female students as it relates to online course completion percentage.

H$_1$: There is a statistically significant difference between male and female students as it relates to online course completion percentage.

Table 7. Results of linear regression of credit completion percentage on student gender, controlling for student age

	Completion Percentage	
	B	SE
Male	-0.12*	0.05
Age	0.01	0.02
Constant	0.28	0.33
N	214	

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

The first question was designed to investigate whether gender differences exist in completion rates amongst students in grades 9-12 passing online courses. There is a statistically significant difference between male and female high school students in online course completion percentage, (P ≤ 0.05). In this sample, controlling for age, male students complete approximately 12 percent fewer of the attempted credits than females (B = - 0.12, SE = 0.054, t = - 2.16, p = 0.032, ß = -.1470138; see Table 7). This indicates that female students are more successful in completing online courses than male students. Consequently, the null hypothesis that there would be no statistical difference in the completion percentages between males and females is rejected.

Research Question 2: Race

RQ2: Is there a statistically significant difference between Black and Non-Black students in grades 9-12 in online course completion percentage?

H_0: There is not a statistically significant difference between Black and Non-Black students in grades 9-12 as it relates to online course completion percentage.

H_1: There is a statistically significant difference between Black and Non-Black students in grades 9-12 as it relates to online course completion percentage.

Table 8. Results of linear regression of credit completion percentage on student race, controlling for student age and gender

	Completion Percentage	
	B	SE
Black	-0.09	0.09
Male	-0.12	0.05
Age	0.01	0.02
Constant	0.39	0.34
N	214	

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

This question was designed to investigate whether statistical significance existed in completion percentages when Black students were compared to Non-Black students in grades 9-12 passing online courses. There is no statistically significant difference between Black and Non-Black high school students in online course completion percentage, ($P \geq 0.05$). In this sample, controlling for student age and gender, Black students complete approximately 10 percent fewer of the attempted credits than Non-Black students. ($B = -0.09$, $SE = 0.09$, $t = -1.05$, $p = 0.293$, $ß = -.0718977$; see Table 8). This indicates that Non-Black students are more successful in completing online courses than Black students. Black students earned 30 percent of the attempted credits, as opposed to, Non-Black students earning 40 percent of the attempted credits. The null hypothesis that there would be no statistical difference in the completion percentages between the subgroups failed to be rejected.

Research Question 3: Grade Level

RQ3: Is there a statistically significant difference based on grade level for students in grades 9-12 in online course completion percentage?

H_0: There is not a statistically significant difference based on grade level for students in grades 9-12 as it relates to online course completion percentage.

H_1: There is a statistically significant difference based on grade level for students in grades 9-12 as it relates to online course completion percentage.

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Table 9. Results of linear regression of credit completion percentage on grade level, controlling for gender

	Completion Percentage	
	B	SE
Upperclassmen	0.12[*]	0.05
Male	-0.10	0.05
Constant	0.44	0.45
N	214	

Notes. [*] = $p < .05$, [**] = $p < .01$, [***] = $p < .001$

The third question examined the student completion rates based on the reported grade levels. There is a statistically significant difference between students classified in combined grades 9 and 10 with students classified in combined grades 11 and 12 or beyond passing online courses, $(P \leq 0.05)$. In this sample, controlling for gender, the upperclassmen, classified in grades 11 or 12, successfully completed 12 percent more of their attempted credits than do the lower classmen. $(B = 0.12, SE = 0.053, t = 2.28, p = 0.024, ß = .1536224$; see Table 9). This indicates that upperclassmen are more successful in completing online courses than underclassmen or younger students. Therefore, the hypothesis that there would be no statistical difference in the completion percentages between grade levels is rejected.

Research Question 4: Grade level according to expected age

RQ4: Is there a statistically significant difference based on whether or not a student is classified in the correct grade according to age in online course completion percentage?

H₀: There is not a statistically significant difference based on whether or not a student is classified in the correct grade according to age in online course completion percentage.

H₁: There is a statistically significant difference based on whether or not a student is classified in the correct grade according to age in online course completion percentage.

Table 10. Results of linear regression of credit completion percentage on grade level according to expected age, controlling for student age and gender

	Completion Percentage	
	B	SE
Expected Age	0.15*	0.06
Male	-0.10	0.05
Age	0.04	0.02
Constant	-0.19	0.38
N	213	

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

Question four investigated the completion rates of student ages based on grade level classification according to age. There is a statistically significant difference between students who are in the correct grade based on their age and the students who are not in the correct grade passing online courses, (P ≤ 0.05). In this sample, students who are in the correct grade based on their age, controlling for gender and age, complete approximately 15 percent more of their attempted credits than their peers who are not in the correct grade based on their age (B = 0.15, SE = 0.061, t = 2.45, p = 0.015, ß = .1906628; see Table 10). This indicates that students are more successful in online courses when they are the correct age according to their classified grade level. Interestingly, more than 50 percent of this sample was over-aged and under-credited. Essentially, 112 students were classified in a grade level that was not aligned with the age bands provided in Table 3 because they had earned fewer credits than required to be in the correct grade according to age (see Table 8). Accordingly, the hypothesis that there would be no statistical difference in the completion percentages when student grade level

classification was compared to students classified at grade level and correct age is rejected.

Summary

Upon analyzing the archival data, the researcher failed to reject the null hypothesis for research question 2: Is there a statistically significant difference between Black and Non-Black students in grades 9-12 in completion percentage? Race has no statistical influence on course completion. However, race does have practical significance demonstrating the achievement gap exists in online course work with Black students completing 10 percent fewer credits than their white counterparts. The average for the entire cohort provided in this study shows students typically complete forty percent of the attempted credits. Yet, another interpretation of this data demonstrates for sixty percent of the courses attempted in this data set, students are not likely to complete courses successfully.

Gender, grade level, and grade level according to expected age, was found to have a statistically significant influence on the outcome of course completion percentages. Consequently, the null hypotheses were rejected for research questions 1, 3, and 4. When males and females were compared for completion percentage, males complete fewer attempted credits than do females. When upperclassmen's performance is compared with lower classmen's performance, students in advanced grade levels complete twelve percent more attempted credits than freshman and sophomore students. The relationship of student age and classified grade level was found to be significant; depicting students at grade level are more likely to complete online courses than those that are not.

This chapter presented the data analysis results for each research question. Chapter 5 provides an interpretation of the results, practical implications, and limitations of the study. Furthermore, recommendations for future research are discussed.

CHAPTER V

CONCLUSION

Introduction

The high stakes placed on graduation rates create a significant challenge for

educators to improve school completion. With the expansion of technology, online

learning is a pedagogical tool school districts are utilizing to help students recover credit

and earn new credits towards graduation. This study quantitatively explored the

completion percentages and related high school predictors of success for students

attempting credits in digital learning environments. The purpose of this chapter is to

integrate the previous chapters to provide a comprehensive summary. The elements

included in this chapter provides a discussion of the findings and interpretations related to

the literature review, implications for practice, limitations of the study, recommendations

for further research, and a summary of the study. This chapter will describe the gaps in

research explored in this study and the significance this information plays for educators

utilizing virtual learning tools in high schools.

Discussion of the Findings

I.   <u>Gender</u>

When males and females were compared for completion percentage, males completed

fewer credits than did females, based on the findings of this study. For this research

question, the researcher rejected the null hypothesis. Gender research identified more

females are enrolled in e-learning course work (Johnson, 2011). Overall, 51 percent of

the data set is represented by females (see table 3). Based on the population studied in

this investigation, there was no significant difference in enrollment to confirm this

statement, as the sample included 110 females and 105 males. As mentioned in the

literature review, inconclusive findings related to gender in virtual learning warrant more

empirical studies to draw conclusions (Chyung, 2007; Yukselturk & Bulut, 2007).

This study determined female course completion percentages were 12 percent higher

than their male counterparts. The findings of this research support the empirical basis of

knowledge, indicating females will perform better than males in digital learning settings.

Aragon and Johnson (2008) found females are more likely to complete online

coursework, but no significant difference was found to correlate with academic readiness

or self-directed learning. It has been suggested by Johnson (2011), males and females

interact differently in E-learning environments due to female communication strengths in

this environment. An online learning education, grounded in asynchronous

communication tools, would serve as an advantage for female students based on this

assumption.

The findings of Kupcyzynski et al. (2014) may not support the results of this study

with respect to gender and achievement. These researchers reported, within the

population of students with low GPAs, female students scored higher than male students. It will be observed in the discussion of research questions three and four, 52 percent of the sample for this study were over-aged and under-credited (see Table 5). Additionally, 22 percent of the sample was represented by over-aged and under-credited females. It is likely, this population of students within the sample have lower GPAs as a result of under-performing or failing attempted credits throughout their high school experience in traditional or virtual settings. However, the results of this investigation found upperclassmen and students who in the correct grade level according to the expected age are more likely to complete online courses successfully. Further analysis of the completion percentages for this specific group of students must be explored to support or refute the findings of these researchers.

Padilla-MeléNdez et al. (2013) examined gender differences in a blended learning system. They found female perceived ease of use is a critical factor in the acceptance of use of blended learning system. Wang et al. (2009) study found social influence (SI) to be significant for men, contradicting other findings supporting SI as a strong predictor for usage for females. Additional research conducted by González-Gómez (2012) explains that research generally concludes male students are more willing to use and learn about computers than female students, while Ong & Lai (2006) confirmed male student perceptions of E-learning is more positive than female students. These findings cannot be confirmed with this study without knowing the methods of instructional delivery and setting. Brown and Czerniewicz (2009) suggest complexities in researching gender differences may be highly context-dependent. It is more difficult to predict the outcomes

based on gender without full knowledge of the context and tasks involved in the coursework.

II.   <u>Race</u>

Race has no statistical influence on course completion. Consequently, it is the only null hypothesis in this study that failed to be rejected. However, the results pertaining to race do have practical significance as African-American students completed 10 percent fewer credits than their white counterparts. The average rate of completion for the entire cohort provided in this study shows students complete forty percent of the attempted credits. The most notable gap in achievement exists between African American males and their White classmates (Neblett, Jr., et al., 2009: Vega et al., 2015). Black students are overwhelmingly represented in this sample totaling 90 percent of the subjects, and still lagged in performance. From this study, it appears the achievement gap remains a concern in virtual education.

According to Vega et al. (2015), students of color are adversely affected in the areas of academic achievement and success when there is limited school personnel support present. Literature estimates as many as 40% to 60% of all youth in urban, suburban, and rural areas...are disconnected from school by the time they enter high school (Klem & Connell, 2004 & Monahan et al., 2010). Personal interactions are critical for learners at risk to become actively engaged and achieve at higher levels. Digital learning requires a degree of autonomy, self-motivation, and independent study. The ability to self-monitor, self-motivate, learn meaningful social behaviors, and access resources are vitally important for students at-risk of failing (Archambault et al., 2010; Christle, Jolivette & Nelson, 2007). As the modes of communication transition from print to digital, it is

essential to prepare youth to become digitally literate within online environments through the support school personnel. To this end, this result supports research cited in the literature review about Black students and achievement.

In traditional learning environments, Black male youth are highly recognized for nearly every school failure indicator, including the dropout rate, absenteeism, and achievement (Bridgeland, 2006), demonstrating the most troubling levels of academic achievement (Jackson & Hilliard, 2013). For online settings, the research is conflicting, likely due to the need for more research. Xu and Jaggars (2013) found Black students in college with low G.P.A.'s did worse in online courses than expected when compared to their face-to-face counterparts. Contrary to their results, Wladis et al. (2015) found ethnicity was not related to online course outcomes when compared to traditional face-to-face courses. Race in relation to learning online remains inconclusive and an area for further studies.

Upon further inspection of the data, for roughly sixty percent of the courses attempted in this data set, students are likely to complete with a failing grade. Research demonstrates the high school student passing rates in online coursework are generally 30-60 percent (Blazer, 2009). This result aligns with the findings in the research. This outcome raises questions beyond the scope of this research. This is not a racial concern but an achievement issue that requires further investigation.

III.   Completion Percentage Based on Grade Level

When the performance of students in grades 11 and 12 (upperclassmen) was compared with the performance of 9th and 10th-grade students (underclassmen), students in advanced grade levels demonstrated higher completion percentages successfully

completing twelve percent more attempted credits than underclassmen. The null

hypothesis was rejected. This finding supports prior literature from higher learning and

K-12 findings that suggest older students are more successful in online courses than

younger students (Cavanaugh, 2005; James et al.,2016). Cavanaugh (2005) emphasized

younger students need more scaffolding in virtual learning course work.

Khechine et al. (2014) reported older students were more concerned with facilitating

conditions (FC). The researchers reported effort expectancy (EE) was not a concern for

students in the blended setting; however, the expectancy of performing better influenced

younger students to use the blended system. In a study conducted by Cochran et al.

(2014), in higher education settings, senior-level students were less likely to withdraw

from online classes than non-seniors. According to Joo et al. (2000), in a study on Web-

based instruction, self-efficacy and self-regulation cooperatively influence academic

achievement; however, it is context-dependent. Literature supports student online

readiness as one of the predictive factors of success in blended learning (Graham, 2006).

Researchers also note technology adeptness predicts course completion (de la Varre et al.,

2014). Limitations in digital literacy and the lack of an understanding of norms and

practices of appropriate usage complicate the ability of students to become competent

scholars (Meyers et al., 2013). This research suggests many other factors influence

course completions, including context, maturity, self-regulation, self-efficacy, digital

literacy, technology adeptness, motivation, and online readiness are vital factors to online

success.

Wang et al. (2009) explained age groups older than 30 years of age and young than

30 were significant predictors of online behavior for performance expectancy (PE), effort

expectancy (EE), perceived playfulness (PP) and self-management of learning (SL); Meanwhile, social influence (SI) was significant predictor for the younger group. Applying this finding to the current study with the ages of the sample population ranging between 14 and 21 years of age, every determinant would be applicable. Age differences moderate the effects of behavior intention, supporting prior findings that age is a strong predictor of technology usage for older people. These findings can neither be supported nor refuted based on the results of this study.

IV.   Completion Percentage Based on Grade level according to expected age

The relationship of student age and classified grade level was found to be significant, depicting students at grade level are 15 percent more likely to complete online courses than those that are not. Consequently, the null hypothesis was rejected. Research conducted by the Consortium on Chicago School Research (2007) demonstrates students on-track at the end of their freshman year to graduate from high school are four times more likely to graduate than students who are off-track after their freshman year (Allensworth & Easton, 2007). Allensworth & Easton (2007) emphasize failing a class in grade 9 is one of the most significant predictors of not graduating from high school. This finding suggests online learners are on track for timely high school completion.

At first glance, the results of this investigation are encouraging for at grade level students attempting virtual credits. However, approximately 52 percent of the sample population was classified as overaged and under-credited; in other words, students at risk of failing to complete high school. Poor school performance is the strongest predictor linked to the decision to leave school early (Tyler & Lofstrom, 2009). Though students at grade level have a higher completion rate, students who are not in the correct grade level according to the expected age are at risk of not completing high school.

Bandura (1997) defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments." Essentially, self-efficacy is the belief an individual possesses in their capability to successfully perform a task (Bandura, 1997). Poor performances in school can reduce student self-efficacy and is an indicator of future behavior towards course work. Efficacy beliefs determine how environmental opportunities and obstacles are perceived and affect the choice of activities, the amount of effort that is given to an activity, and how long people will persevere when faced with difficulties and failures (Bandura, 1997). Liaw (2008) determined through an online model, learner's self-efficacy as the largest contributor to student satisfaction and online course retention.

The graduation rate and dropout rate in the United States is a historical education concern that disproportionately affects low income and minority students. The subjects studied in this investigation likely represent economically disadvantaged minority students based on the demographics of the participating districts and the subsequent sample for this study. The high school online education research investigating students who are not classified in the correct grade based on age does not exist. Further research exploring these determinants are needed to make comparisons and to draw conclusions.

Implications for Practice

The results of this study provided evidence that differences in online learner characteristics exist in digital learning environments when examining online course completions. All but one research hypothesis was accepted. Positive results indicate students in upper-grade levels, and females are more likely than males to be successful earn credits in virtual learning environments. The study also produced favorable results

for students who are at grade level to complete online courses successfully. Contrary to the favorable outcomes identified in this study, negative results provide some insight related to the looming achievement gap. Black students are not statistically likely to complete online courses when compared to Non-Black students. Another finding demonstrates more than half of the sample population were overaged, under-credited high school students, and were unlikely to complete online courses satisfactorily.

This study suggests differences of learner characteristics exist between student subgroups in completion percentages when enrolled in digital learning courses. The implications of this study have practical significance for educators and school districts implementing virtual learning options within the standard curriculum. After reviewing the results of this study, the researcher suggests school officials responsible for program enrollment and implementation (a) develop policies and procedures designed for online learning programming, (b) participate in professional learning opportunities to support online learners and (c) carefully craft an evaluation plan that values the voices of all stakeholders intricately engaged with the virtual learning program.

The availability of online learning education expanded rapidly across secondary education in recent years, but little research exists to support or refute its effectiveness (Borup et al., 2014). It is imperative to understand student learner characteristics and predictors of success for the virtual learning environments as they become increasingly popular and available to high school students. Educators need to understand the role and influence of learner characteristics to help design policies and procedures as necessary to identify students requiring early interventions and supports when working virtually. Furthermore, the results yielded from this study can lead to future research in the

development of professional training for teaching staff, the influence of age and gender in online environments, achievement gaps in virtual learning, and effectiveness of digital settings on students most at risk for failing to complete high school. As districts move forward with program implementation, more information has to be gathered from staff, and students on their perceptions and experiences in digital learning settings.

Limitations of the Study

This study has limitations that are addressed here for consideration in future research. Firstly, this study is not experimental prohibiting the researcher from drawing causal relationships from the findings. The descriptive comparative research design does not explain causality. A research design that elicits in-depth explanations is recommended so that conclusions can be drawn. The results were gathered from a large sample. However, the sample lacked racial diversity. Therefore, it was not broad enough to assess course completion percentage rates related to race. Future studies should require a more racially inclusive sample to determine racial differences. Context is an area the researcher was unable to control for in this study. From the data collected, distinctions could not be made for differences depending upon where students completed the courses. The research did not indicate if students were enrolled in hybrid programs, situated in laboratory settings, classroom environments, or independently completing courses from home or other remote locations. In line with this limitation, the study does not distinguish between settings designed to offer student support, family support, or support of any kind. Future studies should consider identifying the virtual programs used by the district, the years the credits were attempted, and the courses attempted for comparison to assess course completion percentages. Individual course comparisons were not considered for

this investigation. These variables are critical in evaluating student success and program effectiveness of virtual learning programs.

Recommendations for Further Research

The goal of this study was to investigate differences about high school learner characteristics with course completion percentages as the dependent variable. This study analyzed archival data and reported the differences observed across subgroups. The results of this descriptive comparative research study could not draw conclusions because it is restricted to reporting differences only. The research is minimal for secondary online education. Future studies can utilize similar data and further explain causality. Several recommendations are provided for further research.

- Replicate this study and interview the students to determine their experiences and suggestions for improvement.

- The race variable was not statistically significant; however, it is practically significant. Black students are completing ten percent fewer credits than Non-Black students. This finding suggests an achievement gap exists in online learning. Recommendations to further investigate this variable are to perform a mixed-methods study with a more racially inclusive sample utilizing the same virtual learning platform and context to explain differences within racial subgroups based on gender. The experiences of the students in this digital world are critical to understanding implementation, performance, and achievement.

- This study suggests students enrolled in online courses classified in their correct grade and correct age complete credits at a fifteen percent higher rate than overaged and under-credited students. Of the 215 students in this sample, 52

percent were found to be overaged for the grade classification, yet, trailed in rates of completion in earning credits towards graduation. A premise of online learning was founded on credit recovery. Further research should be conducted to explore the percentage of completion for this population and the factors contributing to successful credit completions. Additional examining may support decision-makers to determine whether the return on investment for online learning is worth it.

- Not discussed in detail in this current study was the concept of dropout recovery schools and online charter schools. A suggestion for future research is to replicate this study in these school contexts to compare findings. This study would address the concern of context and provide a homogenized sample.

- Online readiness is a multidimensional characteristic. It is further suggested to perform studies exploring the accuracy of ESPRI-V2, an online readiness assessment tool. It is essentially an instrument utilized to predict online learning success. Assessing online readiness may serve to improve completion percentages.

Summary

Archival records of students who had attempted credits towards high school graduation through online learning coursework were collected from four participating school districts across Northeast Ohio. Standard linear regression was calculated to predict course completion percentages based on gender, race, grade level, and grade level according to expected age as the independent variables. Gender, grade level, and grade

level according to expected age were found to have a statistical influence on the outcome of course completion percentages, while race was not statistically significant.

The purpose of this study was to examine the differences of high school student completion rates of credits attempted in virtual learning environments when compared with various learner characteristics. This study raises questions that confront educators, administrators, stakeholders, and students: Is online learning a valuable pedagogical tool for all high school learners? According to this investigation, the descriptive comparative analysis demonstrated differences amongst student groups based on gender, grade level, and grade level according to expected age. Virtual learning might be plausible for high school students with proper implementation and procedures to provide student support. Is online learning really cost-effective? According to the findings in this study, the completion percentage rates do not warrant the investment. Determining cost-effectiveness is an area for districts to explore further based on district needs and expectations. Administrators will need to perform a cost analysis of the expenses with the expected outcomes to best answer this question.

Online learning has carved a future for itself in high school education. Digital learning grew rapidly and has the potential to spread further as technology advances. Virtual courses offer educators an opportunity to redefine education, limiting biases toward individual characteristics. Differences in online learning behavior and outcomes have been a topic of interest for researchers, primarily in higher learning settings. As online programming continues to expand throughout secondary education, stakeholders, educators, parents, and students have to clearly identify whether it is a suitable option. Supports and interventions are necessary for high school students. Continued

improvement of online studies can advance educational attainment for students most at risk. Numerous studies performed at the community college and university level have generalized findings to high school leveled students. For some factors, there seems to be some alignment. Whereas, other factors require closer attention for the high school population to successfully complete online coursework.

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    Adolescence.

APPENDIX

APPENDIX A

Request to Conduct a Research Activity or Collect Information

In the _____ School District

Name of Investigator: _____**Dr. Brian Harper**_____

Name of Co-Investigator: _____**Gina N. Eaton**_____

Home Address: _____

Home Telephone: _____

Business Address: ___**2485 Euclid Avenue, Cleveland, OH 44115**_____

Business Telephone: _____

E-mail Address: _____**g.n.eaton@csuohio.edu**_____

1. Your professional position: _____**graduate student**_____

2. Has the study been reviewed and approved for protection of subjects' rights by the Institutional Review   Board at an academic or research institution?

X☐Yes   ☐No

If yes, attach copy of approval documentation.

If no, explain why not.

3. Are you proposing this study in connection with a college or university requirement?

X☐Yes   ☐No

If yes, who is your advisor?

Name: _____**Dr. Brian Harper**_____

Institution: _____**Cleveland State University**_____

Has the study been formally approved by a faculty committee at the above-listed institution?

X☐Yes   ☐No

4. How are the costs of this proposed study being funded? ☐

Please explain:

Funding for this study is not required.

5. Explanation of research problems and goals:

Limited research in 9-12 online learning exists. Ohio's graduation rate declined four percentage points from 2013 -2016. The goal of this research is to identify whether online education positively influences district graduation rates by investigating archival data of high school students (9-12+) completing online course work. The investigator will specifically identify student profiles successfully completing courses and explore the differences in online academic achievement and completion percentage.

Title of Research:

An Examination of High School Student Success In Online Learning Courses In

Northeast Ohio

6. Direct value of the research to the:

The results of this research will inform the school district with data to make informed decisions about the general application of online learning for high school level students.

7. Summary of data collection. Include specific information about how you propose to collect your data. This should include procedures, individual(s) who will be collecting the data and support you may need from the district for this process.

The investigators for this study are requesting access to archival data pertaining to students enrolled in online courses/programs. The data will be analyzed utilizing the SPSS program.

Desired time schedule: __**Fall Semester 2019**_____

8. Will pupils be required as subjects for this study? If so, please explain in what manner pupils will be needed.

Number: _____n/a_____   Grade level(s): _____n/a_____

Pupils are not requested for this study.

9. Describe any other specific requirements for pupils, including ability level, socio-economic level, racial/ethnic background, physical characteristics, other special characteristics.

Pupils are not requested for this study.

10. Will school staff, parents or former students be subjects of this study? If so, please explain who is needed and in what manner they will be needed.

Pupils, staff and parents are not requested for this study.

Number: ___n/a_____

11. Describe any other specific requirements for staff, parents or former students, including socio-economic level, racial/ethnic background, physical characteristics, other special characteristics.

Pupils, staff and parents are not requested for this study.

12. What tests, observation guides, interviews, attitude scale, etc. will be used in the study? Please indicate the time needed to administer the instruments. Please attach samples.

      X   Not applicable   Samples attached

Investigator will analyze archival data for this study utilizing SPSS.

13. What support do you need from the District such as scheduling, provision of a public access mailing list, etc.?

None

14. What will be the outcome of this study (e.g., dissertation, article for publication, paper to meet a course requirement) and how will the findings be distributed? In what way, will the district schools, the community, staff, students, parents, or others be identified in the findings?

The findings from this study will be utilized to fulfill the requirements to complete dissertation for graduate studies. The findings will be published in the dissertation. Participating districts will be identified anonymously.

I will supply the school district one (1) copy of each report/paper/article that is developed as a part of this project.

I understand that the school district has the right to withdraw its participation from this project at any time.

Signed

Date   9/25/2019

Address

Telephone

****

ACTION TAKEN:

☐ Approved   ☐ Disapproved   ☐ Returned for additional information

☐ Approved conditionally with the following changes:

_____

_____

_____

_____

_____

District Representative Signature

Date _____