EFFECTS of PEARSON'S DIGITAL LEARNING SOLUTION ON THE 11TH GRADE STUDENTS' ACT GROWTH IN A REGIONAL EDUCATION CONSORTIUM IN NORTHWEST OHIO

Erik Belcher

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Committee:

John Gillham, Ed.D.,
Chair, Dissertation Committee

John Brasfield, Ph.D.
Committee Member

Jayson Selgo, Ed.D.
Committee Member

Abstract

EFFECTS of PEARSON'S DIGITAL LEARNING SOLUTION ON THE 11TH GRADE STUDENTS' ACT GROWTH IN A REGIONAL EDUCATION CONSORTIUM IN NORTHWEST OHIO. This is a quantitative research study designed to answer the following research questions: (1) Does Pearson GradPoint GradPoint significantly increase a student's ACT score within the regional education consortium in Northwest Ohio? (2) What impact does Pearson GradPoint Prep have on improving ACT scores for students of various races, genders, and economical backgrounds within the regional education consortium in Northwest Ohio? (3) What impact does the Pearson GradPoint GradPoint have on students with disabilities? (4) What impact does Pearson GradPoint ACT have on helping students to be remediation-free for college? The data in this study was collected from participating schools within the regional education consortium located in Northwest Ohio. A series of t-tests were conducted in the first three research questions, while a descriptive analysis was conducted on research question four. A stepwise regression test was conducted on all the independent variables in this study. The results of this study showed that students who took the GradPoint class had no statistical difference in ACT scores in research questions one through three. The fourth research question found that the GradPoint class does not help students to be remediation-free on the ACT test. The stepwise regression showed that the highest predictable independent variables in this study were found in the economically disadvantaged subgroup, while the ACT class did not correlate to higher ACT scores.

Dedication

This dissertation is dedicated to my children, my wife Angie, and my parents Mick and Linda Belcher. This dissertation is a reflection of the hard work, sacrifice, and support they have given me throughout this process.

Acknowledgments

This dissertation would not have been possible without the love, support and encouragement I have received from my wife, parents, and sisters. My wife Angie Belcher and I began this journey to complete our doctorate together and over the course of the process have leaned on the support, love, and encouragement to finish what was started and to help make a difference in education. We have completed every step of this process together from the beginning to end and there is no other person I would want to share this process with than her. My parents Mick and Linda Belcher have instilled in me the ability to see the process through and that hard work and dedication is needed to make a difference in the work we do. The guidance and example that they have set for their children has been the bedrock for who I am today. I hope to be the example for my children as my parents and sisters have been for me.

I would like to thank those who have helped in the guidance of this dissertation. I would like to acknowledge the professors at the University of Findlay who have helped to guide me through the process while challenging me all the way. In particular, I would like to acknowledge Dr. John Gillham my Dissertation Chair. Dr. Gillham has been reassuring when needed and tough when that was called for all the while pushing me to do my best work and to not be comfortable with the status quo. The final person for acknowledgment is Heidi Mekus. Her guidance and support have been essential in the completion of this dissertation.

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Chapter I. Introduction

Background of the Problem

The rapid development of informational technology has made web-based instruction the new global trend in educating students (Chou, 2013). Schools have seen a rapid rise in the number of students who are being educated in a digital learning environment, and the number of students in Ohio who are educated through virtual technology is growing every year as students are leaving traditional schools and opting for this method of education. According to the most recent statistics, in Ohio alone, there are over 34,355 students enrolled in online charter schools (School Choice Ohio, 2018). The first online charter school districts in Ohio began in 2000, and there are currently over twenty-seven such districts operating in the state today. As a result, traditional schools are losing students at an alarming rate. As the student population in Ohio has decreased since 2000, the number of charter schools has continued to grow. This trend is not unique to Ohio; online charter schools are operating in states around the country based on the specific laws of each state. During the 2009-2010 school year, elementary and secondary students nationwide took 1.8 million courses online while an additional 250,000 students were enrolled full-time in virtual schools. The funding that followed these students varied from the 70-100% of the state and per pupil rates. In Ohio, online charter schools received $5,745 per pupil during the 2013/14 school year. Assuming the same rate of funding applies to the 34,355 students currently enrolled in online charter schools. 197 million dollars per year is spent on online charter schools in the state of Ohio (School Choice Ohio, 2018). These monies follow the student and are therefore deducted from the annual funds granted to public schools where these students live. Because of these deductions, school districts are forced to meet the needs of all their students by contracting with their own digital learning solution. This happens in many ways

within contracting with outside companies to providing online learning for students in the district with financial incentives coming back to the district. Districts across the state are beginning to shift resources toward the creation of incorporating online education into the typical brick and mortar schools.

A regional education consortium was established by 53 school districts from four counties in Northwest Ohio who wrote and received a Straight A Grant through the state of Ohio for innovative practices to improve education in rural schools for $3.5 million in December of 2013. The monies were received in January of 2014, and students began enrolling in the virtual classes beginning in February during the second semester of that school year. The monies received in this grant went toward technological needs of the districts, professional development, five years of the virtual Pearson curriculum GradPoint and Connections licensing, and the development of digital learning classroom. Districts began providing services to their students by bringing back students from for-profit charter schools, enriching brick and mortar programs for students through virtual learning, and through credit recovery. Other school districts opted to join the consortium over the following years. In the two years since its implementation, fifty districts from around Ohio and Michigan have elected to join the regional education consortium in Northwest Ohio.

The regional education consortium in Northwest Ohio was implemented in these districts for a variety of reasons unique to the needs of each district including districts being able to offer an online program for those students who seek to be educated outside of traditional brick and mortar schools. Small rural districts in Northwest Ohio are not as easily able to offer a diverse listing of curriculum to their districts due to smaller student enrollment and thus were looking to enrich their current curriculum with the GradPoint and Connections coursework. Along with the

curriculum offered, the regional education consortium in Northwest Ohio established a support network for district administrators, teachers, school counselors, and technology coordinators to share best practices and enrichment of services. With this model, school districts are working together to share expertise and to promote best practices. The flexibility of curriculum offered through GradPoint and Connections allows districts to look at this curriculum to help fulfill state requirements and meet the needs of students based on existing legislation currently affecting school districts in Ohio. Pearson-Connexus provides student-centered learning through districts by building a digital learning experience that customizes learning for the district and student. This program provides professional development and training, courses, curriculum, instructional services, program management, and support (Pearson-Connexus, 2018). School districts also use a student information system called PowerSchool which covers administrative needs such as scheduling, attendance, state compliance reporting, data management, faculty management, emergency/medical and health management, registration and more (PowerSchool, 2018). The information that PowerSchool reports allows districts to accurately provide critical district information on demand and empowers schools and districts to report a variety of data sources and to build custom reports to analyze data.

Students across the country use their ACT scores for college admission, obtaining scholarships and even being assigned to remedial classes and are often taking the test multiple times (Moss et al., 2012). Now, students in Ohio opting to meet graduation requirements through this pathway will be adding another reason to take the ACT test. School districts across the state will be looking at how they best can help their students improve upon their ACT scores. 11th grade students in Ohio are not scoring high enough on the ACT to be considered remediation-free for college, thus failing to meet this component for graduation from an Ohio high school.

Each year, approximately one-third of all graduating students from secondary public schools are considered academically underprepared for the rigors of college level courses (Barnes, 2010; Bettinger & Long, 2005). The significance of this problem is that these students must be remediation-free on the ACT test for college entrance in addition to meeting the graduation requirements set by Ohio House Bill 487. Students who are not remediation-free on the ACT may be forced to take additional coursework at their expense while in college. These significant issues are on the forefront of issues affecting school districts across the state.

Too often educational reform is driven by legislature instead of by educators. The impact of such legislation has caused the educational process to be in flux as reform is implemented and then changed. Too often educational reform promoted through the legislative process has not improved ACT scores across the lines of gender and race (Harvey et al., 2013). Ohio legislators have enacted policies and procedures through the state Operating Standards for the implementation of blended learning in schools which address many of the variables that affect student learning. Blended learning options are required by the Ohio Department of Education and Ohio Administrative Code 3301-35-03. All local boards of education are required to adopt policies and procedures related to blended learning within their operating standards (The Ohio Department of Education, n.d.).

The ACT test is used to measure college readiness and the state of Ohio is using this test as one option to determine if high school students are graduating prepared for college and/or careers. In 2015 in Ohio, 91,607 students in the graduating class took the ACT which accounted for 73% of the graduating seniors (ACT, n.d.). In 2018, this number will increase to almost 100% with the passage of HB 487, which includes students with disabilities and students on 504 plans. The state of Ohio is looking for ways to improve college and career readiness skills in

graduating students and believes that ACT College Readiness Benchmarks will better prepare students to succeed in their future educational endeavors (ACT, n.d.). Ohio joins thirteen other states that require all students to take either the ACT or SAT test. The ACT test will be used by students for admissions into higher education and the scores that these students receive will determine if they enter college remediation-free. These results will also help determine scholarship opportunities for the students in higher education as well as local scholarship opportunities

Ohio House Bill 487 was included in the annual biannual budget that Governor Kasich signed on June 31, 2015, and changed the graduation requirements for graduating seniors. House Bill 487 created three separate pathways for students in Ohio to meet testing requirements for graduation. The first graduation pathway in HB 487 requires all juniors in the state of Ohio to take a College and Career Readiness Test like the American College Test (ACT) or Scholastic Aptitude Test (SAT) beginning in the fall of 2016. These students would then be expected to achieve remediation free scores on areas of the ACT/SAT test as prescribed by the Ohio Board of Regents. The second pathway to graduation would be to accumulate enough testing points on Ohio's State Tests (End-of-Course exams in high school) based on a minimum achievement of eighteen points as prescribed by the Ohio Department of Education. The third and final pathway for graduation would require students to receive state certified licenses in an accredited career field. In addition to creating these pathways to graduation, House Bill 487 also required career technology opportunities for students in sixth through eighth grade in schools throughout Ohio. The state of Ohio through House Bill 487 has required that one pathway for high school students in Ohio to graduate would be to achieve remediation-free scores in language arts (English and reading) and math on the American College Test (ACT). This, combined with the need for public

schools to prepare our students for the changing educational climate in higher education, has brought an existing problem back to the limelight. Currently as it stands, the students within the regional education consortium in Northwest Ohio are falling short on hitting the mark of going into higher education remediation-free. Students within the regional education consortium in Northwest Ohio need to achieve higher ACT scores to enter college remediation-free whether this is using GradPoint or utilizing other ACT coaching curriculum.

Beginning in the spring of 2017, all 11th grade students in the state of Ohio were required to take the ACT or the SAT test as part of Ohio House Bill 487. The ACT/SAT test that is given in the spring of each year is offered on multiple dates from which districts may choose to administer the test in either the paper or online format. This test is paid for by the state of Ohio and school districts in Ohio are committed to giving either the ACT or SAT in one calendar year (The Ohio Department of Education, n.d.). The ACT test scores for each 11th grade student will be used not only for college admission for the students, but also as one of the offered pathways for graduating from high school. The state of Ohio has set multiple pathways for students to graduate and has updated graduation pathways multiple times. Currently, students can meet graduation requirements by achieving a remediation-free score on the ACT, earning points on end of course exams, or by completing industrial-based credentialing. Graduation requirements in the state of Ohio for K-12 schools are set by state statute and enacted by the Ohio Department of Education Ohio House Bill 487 (The Ohio Department of Education, n.d.). In this bill, Ohio colleges and universities established remediation-free standards through the Ohio Department of Education which are determined through set ACT/SAT scores and indicated by Accuplacer test results (Ohio Department of Higher Education, n.d.). Students can earn remediation-free scores

in English Language Arts (English and reading) and Mathematics on a nationally recognized college admission exam.

Rationale & Significance of the Study

Research on this topic has been done in regards to web-based instruction along with research done on implications of web-based instruction on high stakes testing. This research will focus on a specific digital learning solution: Pearson GradPoint and in particular, one course in Pearson Grad Point titled "ACT Prep." This digital learning solution will be specifically measuring pre- and post-tests on the national ACT test that students will take. Research has been done on case studies of individual school districts or a confined set of subjects. Research on GradPoint has not been done by independent researchers in how it improves ACT scores. The research will focus on 11th grade students from various schools in Ohio and Michigan from diverse communities represented within our 53 district regional education consortium in Northwest Ohio. This study will include a wider range of students than in previous research studies and takes into account a number of variables, including. This study will shine a light on the effectiveness of a specific digital solution being implemented in districts to help increase student ACT scores. The research done in this study is important for both schools and students. The potential for improving ACT scores means that schools will be able to meet more indicators on the school report card where school funding and notoriety for the district are tied. School rigor could then be increased where districts would be able to adjust their curriculum guides to allow for school offerings which provide more rigor. Students could also benefit from increasing ACT scores. Increased ACT scores would open doors to a more diverse set of higher institutions. Increased student financial aid is another benefit due to improved ACT scores. These financial

gains can save the student and their family a significant amount of money in the cost of higher education.

The learning management system of GradPoint provides an opportunity for students to learn in either in a virtual or blended learning environment. GradPoint provides an opportunity for students to take hundreds of courses with many learning pathways. The courses that relate to this study are the GradPoint course and the ACT practice tests (Pearson, n.d.). These courses are based on curriculum designed by Pearson to align to the ACT test. Students can work at their own pace throughout the course and data is provided as feedback to students, parents, and teachers. The model that GradPoint uses is designed to be a self-driven class where curriculum is provided through a mixed variety of online approaches. The ACT Prep class is broken up into ACT Prep Language Arts, ACT Prep Mathematics, and ACT Prep Science. When a student logs into their account, they will choose the section that they want to take. When they enter their section, they will view an outline of the class and the various exercises, chapters, and quizzes they will need to complete. When a student begins each chapter, they will need to move through the various pages until they reach the end of the chapter which results in a quiz being given and the cut scores set by the proctor of the school district where the student attends. Throughout each chapter, the student will experience curriculum that they will need to read and prompt directions on how to proceed and choose answers. Often these samples and questions are followed up with a multiple-choice question. Different chapters have videos embedded within them that play short videos that correspond with the topic of that chapter. In the math class, these videos demonstrate the concept of the mathematical problem and how to solve each equation or question. When these short videos are over, students will then follow the prompt to the next unit of the chapter. Embedded with the various chapters are click and drag options

where students will drag corresponding responses to the correct match and order that the directions prompt. When the student works through each of the various chapters, their cut scores will determine which chapter the student passes and which chapter the student needs further help on. Students then have an option to retake the quiz as additional practice. All of these courses are considered prescriptive as they can test out of the chapters in a pre-test so they do not need to work their way through the various chapters. This allows students to spend more time on the areas they have not mastered, while moving on from those where they have demonstrated proficiency. Teacher input differs by district. These teachers serve a vital role as a moderator as well as to be able to direct the students to appropriate measures of guidance on the subject matter.

The study is designed to help educators meet the needs of students by improving student ACT scores to meet the pathway for graduation in the state of Ohio and to prepare high school students to be remediation-free when they begin post-secondary level classes. To help students to prepare for the ACT, they will receive online ACT practice curriculum to help prepare them for the ACT test. This practice curriculum will be provided to the student with the regional education consortium in Northwest Ohio of schools in an online format. Students who participate in the Pearson GradPoint GradPoint class throughout the course of their 11th grade year will show significant growth on their ACT tests compared to those students who do not participate

Purpose of Study

The purpose of this study is to determine what impact Pearson GradPoint has on improving student ACT scores and on helping students to be remediation-free for college.

Research Questions

This study will focus on the impact that the Pearson GradPoint ACT online curriculum has on improving ACT scores within the regional education consortium in Northwest Ohio schools. The following research questions will look to address the different factors regarding this topic to determine the effect they have on student ACT scores.

1. Is participation in Pearson GradPoint ACT Prep associated with higher ACT scores within the regional education consortium in Northwest Ohio?
2. What impact does Pearson GradPoint ACT Prep course have on improving ACT scores with respect to students' race, gender, and economic status within the regional education consortium in Northwest Ohio?
3. What impact does Pearson GradPoint ACT Prep course have on improving ACT scores of students in the regional education consortium in Northwest Ohio who are on an Individualized Education Plan (IEP)?
4. What impact does Pearson GradPoint ACT Prep course have on helping students to be remediation-free for college?

Definition of Terms

The key terms in this research topic are: blended instruction, learning motivation, American College Test (ACT), Pearson GradPoint, remediation-free, brick and mortar student, and virtual learning.

Blended instruction is the mix of traditional and interactive-rich forms of classroom instruction with learning technologies (Bielawski & Metcalf, 2003).

Learning motivation. For the purposes of this study, *learning motivation* is defined as the force to arouse, give direction to, continue, and choose a particular learning behavior (Wlodkowski, 1985).

The *ACT test* is the American College Test and is comprised of four sections: English, mathematics, reading, and science. There is also an optional writing test.

Pearson GradPoint is a personalized learning solution for students in grades 6-12 providing curriculum through web-based instruction.

Brick and mortar students are defined as those students who are present on the campus in which their education is provided.

Remediation-free on the ACT is defined as reaching the minimal composite score on the ACT as set by the Board of Regents to meet the readiness to begin college or career readiness.

Virtual Learning is the use of computer and internet in the learning process.

Researcher Bias

As a school superintendent and public school educator, the researcher believes that the chosen curriculum used to help students succeed often comes from the educational decision and financial decision to invest district funds, based on what will provide the best opportunity for students to succeed. These decisions are based on the best information and our experiences in the subject area. The researcher has a vested interest in the success of the regional education consortium of Northwest Ohio and has authored an article for publication on the success of this consortium for a national journal. The researcher's reputation has been deeply tied to the success of the regional education consortium of Northwest Ohio and he has encouraged the growth of the regional education consortium of Northwest Ohio throughout Ohio and Michigan. The success of the regional education consortium of Northwest Ohio and the researcher's position create bias in the study. The first step to alleviating the researcher bias will be to include eleventh grade students from schools throughout the consortium. By involving a wide range of students, the

research will provide a high number of participants for the study free of any bias from staff or administration. This bias will be kept from the findings in that all students who take the ACT test in their junior year will be included in this study.

Chapter II. Literature Review

The rapid development of informational technology has made web-based instruction the educational approach in the new global trend in how educators educate students (Chou, 2013). With these online options comes a funding mechanism decrease in public school districts across the state that have begun to change the way education is provided to students to meet the online charter demand. 34,335 students enrolled in online schools in Ohio; 27 in online charter schools; this equates to 1.8 million courses online while an additional 250,000 students were enrolled full time in virtual schools; the state spent roughly $5,745 per pupil during the 2013/14 school year (School Choice Ohio, n.d.). As a result, school districts across the state and country are creating online learning opportunities for students to improve instruction in a modality that is reflective of a 21st century education.

Resources used to locate literature on this topic include: UF1SEARCH (Findlay University, n.d.), which searches 228 databases from a wide variety of fields, the ACT website (ACT, n.d.), the Ohio Department of Education website (Ohio Department of Education, n.d), and the Pearson GradPoint website (Pearson, n.d.). Literature came from a variety of educational sources related to students ranging from those in early elementary school through college. The researcher sought to answer whether ACT coaching through Pearson GradPoint classes improves student ACT scores to meet remediation-free levels for graduation requirements along with meeting college acceptance requirements. Currently, research on GradPoint as it pertains to improving ACT scores does not exist. In order to understand this study, it is important to understand the relevant research. The objective of this literature review is to review the various literature available on blended instruction, effects of virtual learning, ACT and college readiness.

Schools and students alike have focused on test preparation to increase test scores as high stakes testing has increased the stakes for the results of these tests. Both schools and students have tried to prepare for the tests in order to increase their scores. This test preparation has resulted in schools spending educational time and resources to improve student and school scores. This study has a focus on improving the ACT test which is one of the many high stakes tests effecting students with implications for both student and school. Test preparation has resulted from high stakes testing and this topic is essential to this study.

Blended instruction has become evident in schools around the country. Technology advancement, along with technology resources in schools, has made blended instruction part of the curriculum used in schools. Students in school have become accustomed to using these resources in a blended learning environment. The GradPoint ACT Prep class from Pearson is an online module that is accessible to students in schools in the regional education consortium in Northwest Ohio and this online resource is used within the brick and mortar of schools. Blended instruction is important to this study as it is the means by which information is being delivered to the students.

The impact of virtual learning is evolving as blended learning becomes more common and students are exposed to virtual learning. Virtual learning has become a viable option for students and their families. With this option comes a different set of skills that are needed for student success. Along with these skills there is also a different set of expectations that schools need to accept in the transfer of knowledge. In the case of this study, virtual learning is the mode in which information is being transferred and applied. Students and schools that are enrolled in virtual education within Pearson's online learning environment are adapting to the effects necessary to be successful.

The ACT test is one of the high stakes tests used by higher education to determine college enrollment and access to student financial aid. The ACT test is also being used at the high school level to determine class rank and as a path for graduation. The ACT test is significant to this study as this specific high stakes test is the focus of the study and the impact that Pearson's GradPoint has on increasing the ACT scores of students. The research available on the ACT has been researched in the past and is relevant to this study.

College Readiness is a topic that has been researched and the definitions and skills necessary for college readiness have been varied. This topic has been varied and relevant in higher education. College Readiness has been considered a higher education issue but as educational laws have been passed in Ohio and this topic has become relevant in high school. Research on this topic is essential to this study as this study seeks to explore the effectiveness of one online test prep program in preparing students for college.

Test Preparation

A qualitative study was conducted to determine what steps principals in high schools were taking to improve the ACT scores of their students (Burmeister et al., 2015). The purpose of this study was to identify common themes as determined by high school principals on actions taken to increase composite ACT high school scores. The research question guiding this study: What actions do principals report taking to increase composite ACT high school scores? The researcher sent a questionnaire to forty-eight principals that was comprised of six questions aimed at identifying the actions principals reported taking to increase composite ACT high school scores. The data were then coded into themes analyzing the identified actions principals reported taking to improve composite ACT high school scores. The actions principals reported taking were divided into the following sub themes: (a) training programs, (b) staff professional

development, and (c) communication. The findings indicated that a majority of principals reported using training programs such as ACT practice tests and ACT review sessions. Principals also noted the importance of staff professional development on the ACT. Finally, principals reported that communicating with stakeholders was another effective action taken to increase composite ACT scores (Burmeister et al., 2015). This study demonstrates that there are many components to improving ACT scores and that districts like the ones in the study are using test preparation in many high schools.

High stakes testing has led to pressure on both students and schools to improve ACT scores. Students and schools must explore formal approaches to improving student scores. One such model for improving scores is to provide ACT coaching and practice for the ACT test. One such mixed methods study conducted by Moss et al. (2012) focused on improving student scores through ACT coaching. The purpose of this study is to explore the effects that test coaching has on the scores of students from a large suburban high school in the Midwest. The research question guiding this study was: Does participation in a four week Act coaching class increase a students composite ACT score. This study focused on a four week, 20-hour ACT coaching class in a large Midwestern high school. The ACT coaching in this class was done through face-to-face instruction with an instructor using district curriculum. Data collected came from multiple years of ACT testing after the coaching along with surveys. The results of this study showed that students who participated in this class increased their ACT scores by 1.5 points compared to the variable group who raised their scores by .85 points. The researchers found that students who participated in the coaching class increased their composite ACT score by 1.5 points over their previously highest ACT composite score. A similar group at the same high school who did not

participate in the coaching class achieved an increase of 0.65 points, indicating an effect of coaching of 0.85 points (Moss et al., 2012).

Researchers in North Carolina sought to determine the impact of a program in North Carolina which was designed to improve ACT scores of students in rural areas with high poverty rates through a quantitative study. The purpose of the study was to determine if the ASPIRE program was effective in improving ACT scores in rural poverty areas. The research question this study sought to answer was what effect the ASPIRE program had on improving students ACT scores for college admission. Data gathered in connection with that study through interval testing indicated that the coaching program aptly named the ASPIRE program, offered through North Carolina State University and the North Carolina Cooperative Extension, was successful in improving the average scores of socioeconomically disadvantaged students residing in rural and agriculturally intensive counties. Students who were coached through the ASPIRE program increased their ACT score on average by approximately 3.5 points on the ACT's 36-point scale (Anderson et al., 2014). This study demonstrates ACT coaching improves ACT scores through opportunities for students in rural and high poverty areas in a blended format. More research is needed in determining the effect of coaching on different populations of students amongst race and gender.

In a study done in Canada, researchers examined test preparation as it relates to high stakes online test taking for college admission in Canada (Cheng & Fox, 2015). The purpose of the study was to determine if test preparation for state testing improved college admissions for students. The research questions for this study were: 1. What where the characteristics of the computer-administered testing experience for test-takers? 2. What did examining the testing experiences of these test-takers show about construct representation and the interpretive

argument of the iBT? How do the accounts of the test takers compare with those of the language testing researchers reported in 2013? The researchers did not attempt to identify a cause and effect relationship between test preparation and college admission tests. The researchers explored the participants' experiences with an online program in order to understand user experiences with the online test preparation. This was an exploratory mixed methods study that studied the test-taker accounts of an Internet-based (i.e., computer-administered) test of proficiency testing for university admission. The investigators looked into the computer-administered testing experience by asking former and current test-takers for feedback on their testing experience. The results suggest that drawing on the insights of those students who have taken online test preparation increases our understanding of the operational test. The findings from this study suggest that the impact of computer administration on test performance needs to be further explored (Cheng & Fox, 2015). The researchers believe that more research is needed to address the threats to test performance and score interpretation posed by such issues as familiarity (test preparation), test method, and test anxiety.

Teacher and school accountability systems based on tests are appearing throughout the United States and appear to be growing as a catalyst for educational reform. As a result, educators have increased the proportion of instructional time devoted to test preparation (D'Agostino et al., 2014). The research question for this study was: What is the relationship between preparation practices and student test performance? In the southwest region of the United States, researchers focused on the test preparation practices in face-to-face test coaching in thirty-two third and fifth grade classrooms and examined the relationship between student test performance and test preparation activities using a two-level Hierarchical Linear Model. The data used in this study comes from data collected from thirty-four elementary teachers located in

one suburban school district in the southwestern United States. Fifteen third-grade teachers' and nineteen fifth-grade teachers representing twelve elementary schools were interviewed. The results of this qualitative study indicated that instruction on tested objectives using items like those presented on the state test, decontextualized practice, and teaching test taking skills offered no student achievement benefit relative to general instruction on state standards. This led the author to conclude that test preparation in this study was not beneficial (D'Agostino et al., 2014). School reform and accountability processes enacted through legislative control have created a culture where schools are looking for ways to improve student scores. Many teachers in schools where high stakes testing is occurring have resorted to test preparation or teaching to the tests to improve scores with mixed results.

Best Practices in Online Education

Kumar, Martin, Budhrani & Ritzhaupt (2019) conducted a study on award winning faculty online teaching practices. The purpose of the survey was to explore an instructor who won awards in their fild on elements of their course design that were award-winning and the differences between expert and novice online instructors. This study was a qualitative study that used interviews with eight award-winning online faculty members from across the United States. The research questions for this study were: What elements of their online courses did award-winning faculty perceive as award-winning? 2. What do highly effective online faculty perceive as the distinction between an expert and novice online instructor? The interviews were transcribed by two researchers according to each research question. The data was then coded and categories were created. The five main areas that emerged from the data analysis were: relevant and authentic course material, online resources, student digital creation, reflection of learning by students, and instructor's explanation of the purpose of the activities. These faculty

described expert online instructs as being experienced and comfortable in the online environment and use a wide range of strategies, be willing to learn, use data and analytics, and engaging in continuous improvement.

A qualitative study conducted by Zheng and Zhang (2017) studied the interactions and learning outcomes in online language courses. The purpose of this study was to understand why an increasing number of K-12 students who take online courses had reduced opportunities for interaction that may affect learning outcomes. This study examined the different connections between online interactions and learning outcomes for 466 students taking high school level language courses in a Midwestern virtual school. The researcher had two research question that focused on student satisfaction in online courses and student perceived progress. 1. Do any or all of the three types of interactions identified by Moore (1989) affect student satisfaction in online language courses? 2. Do any or all of these three types of interactions affect students' perceived progress in online language courses? The researcher sent a survey to students in a Midwestern virtual school and received feedback from 597 students with a 37.5% response rate. The survey was a 67 item survey that took 20 minutes to complete and included demographic information and the three types of interaction and perceived learning outcome. The results of the study found that empirical evidence suggests that learner-content interaction may help to increase learner satisfaction and perceived progress, and an increase in learner-instructor interaction my benefit student satisfaction. Given the positive effect of learner-content interaction on both student satisfaction and perceived progress, online teachers should follow the following best practice for online learning: 1) building components that reflect students' interests, (2) utilizing student centered practices, (3) clearly organizing and structuring content, (4) embedding deadlines within the content structures and (5) delivering content using different media.

A qualitative study conducted by Whiteside & Dikkers (2016) examined a blended learning initiative in a large suburban high school in the Midwestern United States. This study employed a single-case exploratory design to learn about the experience of the administrators, teachers, students and the parents. The theoretical framework of this study employed Zimmerman's Self-Regulated Learning Theory. The purpose of this study was to explore the effects that blended learning has to regulate student learning and the perceptions of the various stakeholders in this survey. The research questions for this study are: 1. To what extent, if any, does blended learning coursework help students regulate their own learning? 2. What is the experience of different stakeholders (administrators, parents, students, and teachers) in a relatively new blended learning initiative? Each stakeholder group was delivered a series of surveys with a mix of demographic, closed-choice, Likert-scale, and open-ended questions. Face to face blended learning classrooms were observed on their blended learning initiative. The data from these surveys and observations were coded using SRL coding along with the emergent coding process. The results of the study found for each stakeholder group. Principals clearly valued the relational aspect of this blended model, its impact on students' ability to self-regulate and the positive effect on teachers. The parents appreciated that their child could progress at their own pace and the fuel for their child to want to learn. Parents had concerns with training and readiness for blended learning along with their child's use of flex time. Students felt like they had more control over their learning in a blended class and had more responsibility for preparing them for college. Teachers confirmed that blended learning takes significantly more time and resources than face-to-face classes and also not a strong sense of concern about self-efficacy and student readiness. Teachers also suggest that students learn as much or more in the blended classes as compared with student in the traditional face-to-face class.

A descriptive qualitative study done by Armstrong & Gale (2018) focused on the online learning design and implementation models. The purpose of the study was to describe the process of model creation for both models and to systematically validate the two models using a survey and nominal group technique with expert instructional designers. Participants in this study were instructional designers who are experts in the online learning industry all with their doctorates. The four research questions are as follows: 1. How do the instructional designers believe the eSUCCESS model serves as a valid framework for designing and implementation of online learning programs? 2. How would the instructional designers chanfe the model? 3. How do instructional designers believe the R2D2/C3PO model serves as a valid framework for designing and implementation of online synchronous learning programs? 4. How would the instructional designers change the model? Data collection included document review of the models, expert survey responses, and a focus group interview. The results of this study found that design needs to include: executive sponsorship, support from the organization, content that is understandable and motivates the learner, culture fosters learning, relevant to the learner and organization, evaluates and assess, structure of the program is engaging, interactive and blended, and simulates the work environment and work tasks.

A study conducted by Park &Yun (2017) examined the relationships between students' academic levels, the use of motivational regulation strategies, and cognitive learning strategies. The purpose of the study was to explore the relationships between motivational strategies and cognitive learning in online instruction. This qualitative study looked at the following research questions: 1. What is the effect of students' academic level on their use of interest-enhancement MRSs in online distance courses? 2. What is the effect of students' academic level on their use of MRSs in online distance courses? 3. What is the effect of students' academic level on their use of

CLS in online distance courses? A total of 141 undergraduate and graduate students enrolled in online classes completed a survey via survey monkey along with and MRS Questionnaire. The results of the study showed that students use different motivational regulation strategies and cognitive learning strategies depending on their academic levels. A hierarchical regression analyses using two dependent variables (surface learning and deep processing level) indicate that both of the dependent variables are predicted by motivational regulation strategies. The results provide online educators a practical solution on how to support learners.

A study conducted by Borup & Stephens (2017) focused on using student voice to examine teacher practices at an online high school. The purpose of this study was to examine the opinions of the student in an online learning environment. This qualitative study conducted 20 interviews among 10 students at online charter school with each interview lasting over an hour in duration. This study focused around the research question of What qualities do students value in their online learning experience. The theoretical framework used in this study was the ACE framework and this consisted of three primary elements: 1. Teacher engagement including designing and organizing 2. Instructing 3. Facilitating. The qualitative analysis in this study found that students valued teachers' efforts to nurture caring relationships, shape sustained dialogue, design and organize student learning activities that provide personalized instruction. Students however found that teachers varied in their abilities to effectively perform these activities and provided recommendations to improve how courses were designed and how teachers interacted with students.

A study conducted by Kale & Akcaoglu (2017) focused on the role of relevance in future teachers' utility value and interest toward technology. The purpose of this study was to examine the effect that relevance have on developing interest regarding technology integration with

teachers. This qualitative study focused on the following research questions: 1. Does engaging in self-reflection of relevance influence preservice teachers' utility value toward technology when we control for their preexisting utility value, grade level, and competence? 2. Does engaging in self-reflection of relevance influence preservice teachers' situational interest in technology when we control for their preexisting situational interest, grade level, and competence? 3. Does engaging in self-reflection of relevance influence preservice teachers' maintained interest in technology, when we control for their preexisting maintained interest, grade level, situational interest, and competence. 4. Does engaging in self-reflection of relevance influence the kinds of utility values that preservice teacher recognize in their reflection on implemented lessons? 5. Does preservice teachers' grade level influence the kinds of utility values that they recognize in their reflections on implemented lessons? 6. Is there a difference between the utility values that preservice teacher recognize for their future practices and those that are observed in their current lesson implementations? Participants included 111 third year preservice teachers from an instructional technology course taught at a mid-Atlantic university. A pre and post test quasi experimental design was conducted incorporating both statistical and consent analysis. ANCOVA test were conducted on both the pre and post tests for the first three research questions while the last three research questions were based on the content analysis data. The findings of this study revealed the reflecting on the connections of technology to future teaching increased their maintained interest in technology integration. Differences were observed that high school teachers have a higher need for developing higher interest and deeper understanding of utility values of technologies.

A study done by Farrell & Brunton (2020) was conducted to explore online student engagement experiences with students online. The purpose of this study was to examine student

engagements with others in an online course. This qualitative study explored 24 online student engagement experiences in a higher education institution. This case study explored the research question of: What themes are central to online student engagement experiences? The data was collected from participant-generated learning portfolios and semi-structured interviews and were analysed following a data-led thematic approach (Farrell & Brunton, 2020). Five central themes are found in the results of this study including student's sense of community, support networks, balancing study with life, confidence, and their learning approaches. The study demonstrates that successful online student engagement is influenced by a number of factors such as peer environment, engaging online teacher confidence, and by structural facts like life-load and course design (Farrell & Brunton, 2020). The researcher identified the low number participants as a limitation in this study and calls for future research on to be done on this subject.

A study was conducted to help improve k-12 online course design according to the iNACOL national standards for quality online courses (Adelstein & Barbour, 2017). The purpose of this study was to examine the reliability and validity of the iNACOL National Standards for Quality Online Courses (Adelstein & Barbour, 2017). The researcher wanted to test the design the new rubric through expert review. The eight experts were divided into two groups and reviewed the set standards over the course of three rounds by examining each standard from a course design perspective. Each round of the study had the feedback were placed under each standard of the rubric and a 60 minute discussion was had until a consensus was achieved. While the National Standards for Quality Online Course were designed to be broad in nature they did not bring the design into focus. The results of this study helped to bring essential online course design standards into focus. This helped the researcher to revise the rubric to all stakeholders to focus specifically on the aspects of online course design which built

a stronger base to build asynchronous online course content (Adelstein & Barbour, 2017). The researcher felt that future expert review needs to be done beyond the eight experts used in this survey.

A qualitative study conducted by Pulham and Graham (2018) was conducted to provide a synthesis of reports and research on K-12 blended teaching competencies compared to teaching competencies. The purpose of this study was to synthesize the research to compare the domain differences between blended learning and online learning. The research questions for this study were: 1. What skills are most common in K-12 BL teaching competency literature and K-12 OL teaching competency literature? 2. Do BL and OL teaching require the same skill set? If not, what is unique to each? 3. What methodologies have authors of previous OL and BL competency documents used in identifying skill sets? Literature was searched for K-12 online teaching competencies (10) and K-12 blended teaching competencies (8). A constant comparative coding analysis was used to review the literature and peer debriefing was used to come up with a consensus. Results of the study found that both competency domains are: pedagogy, management, assessment, technology, personalization, mastery-based learning, instructional design, dispositions, and improvement. The most noted blended teaching skills included flexibility/personalization, mastery-based learning, data usage, learning management system, online discussion facilitation, and software management. The researchers feel that more transparent data about blended teaching and teacher programs are needed.

A mixed-methods study conducted by Sanga (2018) investigated the process 27 online teaching instructors went through during a semester long course development training to advance their online course design and management skills. The course was designed to introduce key concepts in online teaching and learning that included online course design, digital content

planning and construction, communication management, and troubleshooting. The purpose of the present study was to analyze lessons and benefits emanating from semester long highly specialized online course development training that was attended by 27 online instructors in three consecutive semesters (Sanga, 2018). The research questions sought to be answered in this study were: 1. What specific attributs did faculty members gain from participating in semester-long training on online course design and management? 2. What lessons related to online course design and management came from the whole process of training online teaching faculty members? 3. What implications did this specialized training have on preparing future online instructors on the skills of course design and management trainings? Data for this mixed-methods study was conducted using pre and post survey along with data collected from Google document designed for this purpose. The pre survey was quantitative while the post survey was qualitative. As participants went through the course their reactions, concerns, issues, and lessons were recorded in the Google document. The researched analyzed the process that the 27 instructors went through in how to design and teach an online course. The results found that online instructors needed more specialized training in online course development and management. The study also clearly found that online teaching faculty members had a shortfall of skills in more specialized areas such as course design/management, digital content planning, communication management, and using various learning management add-ons. The researcher found that implementing the right strategies and the right media and technologies in relevant contexts becomes crucial in online learning pedagogy.

A study done by Borup & Chambers (2019) was conducted on K-12 student perceptions of online teacher and on-site facilitator support in online courses. This qualitative study was conducted with the purpose of having focus groups share how they perceive and value the

support they receive from their online teachers. This study addressed the following research questions: 1. What types of support indicators do online students perceive while enrolled in a supplemental online course? 2. What value to students have on the support they receive from online teachers and on-site facilitators? The study was conducted in three Michigan brick-and-mortar K-12 schools who had 82, 197, and 407 online student enrollments who were supplementing their face-to-face course work with online courses offered by Michigan Virtual which is a state run online school. A survey was given to students within focus groups with the students. The surveys used the ACE framework. One of the researchers coded the focus group comments into various categories. The results of the study focused on the following support indicators: advising student, orienting students to online learning procedures/expectations, facilitating interactions, developing caring relationships, motivating students in engagement, organizing/managing student learning, and instructing students regarding course content. Students perceptions were split and more critical of the lack of support they received from their online teachers.

The role of online learning has changed throughout the years, and with this has come the change in the role of the machine as it relates to educating students. The computer and the programs that drive online learning are no more than an artifice of human communication and an extension of contextual practices that have already been in existence (Cope & Kalantzis, 2015). This research study was a review of literature with the purpose of improving online learning through data analysis. When students are working through online curriculum, they experience the primary site for gathering evidence-of-learning and that is to be assessed over what they have learned (Cope & Kalanzis, 2015). While the primary focus on assessment has historically been through testing, an online platform can be designed to add other assessment tools to guide

learning. These assessments are deriving a large amount of data for teachers and students to drill down to retrace learning and determine patterns for remediation or mastery of the content through formative assessments conducted in an online format.

One qualitative study on asynchronous online learning focused on students with learning disabilities and/or Attention-Deficit Disorder (ADD). The purpose of this study was to investigate if asynchronous online access of STEM course content as an effective accommodation for students with LD and/or ADHD in postsecondary STEM courses (Graves et al., 2011) . The research question for this study was: What are the themes to the learning experiences of students in asynchronous online learning? In this study, they discovered that students with access to asynchronous online education had enhanced learning experiences according to six themes: clarity, organization, asynchronous access, convenience, achievement and disability coping mechanism (Graves et al., 2011). The data analysis was able to obtain and verify the true meaning of each participants' responses in the survey. This study did show that asynchronous learning enhances learning for students with disabilities, this study also had limitations as only students registered with the Office of Disability Services were interviewed. Another limitation identified that this study would have been strengthened if students would have been able to share their perceptions. While this study demonstrates that universally designed curriculum such as asynchronous online access appears to help students gain knowledge.

Another qualitative study focused on the student's self-regulated learning and self-efficacy in online learning. The purpose of this study was to examine the relationship among students' characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning settings. The research question employed for this study was: What are the

relationships among student characteristics, self-regulated learning, technology self-efficacy, and course outcomes (Wang, 2013)? This study had two hundred and fifty-six students participate through completion of an online survey. Demographic questionnaire, course satisfaction questionnaire (CSQ), modified motivation strategies for learning questionnaire (modified MSLQ), and online technology self-efficacy scale (OTSES) are the instruments used in the study (Wang, 2013). The results of this study found that students with online learning experience had more effective learning strategies (Wang, 2013). These students also had higher levels of motivation in their online courses along with increased levels of technology, self-efficacy, course satisfaction, and earned better grades in their online classes. Based on the research conducted in this study, the researchers felt that instructors should design courses in a way that can promote a student's self-regulated learning behaviors in an online learning setting and that students in online and traditional classes set defined and regular times to work and concentrate on their coursework.

A qualitative study that focused on designing and developing video lessons for online learning was conducted due to the popularity of videos being embedded in online learning platforms. The study experimented with a model of seven principals to design and develop video lesson for online courses. A survey was conducted on the perceptions of the effectiveness. The research questions this study sought to answer were: What are student perceptions of the video lessons developed with a seven-principle model? To what extent are student perceptions of the video lessons related to their perceptions of the course effectiveness? The study focused on learning by doing, adaptive feedback, and learning through reflection. A study was conducted on 1242 students who completed an end of course exam on the impact that videos had on their learning. Data was collected from the Likert-scale questions were analyzed using descriptive

and deferential statistics in SPSS. This study found that 80% of the students agreed that these video exercises kept them engaged and enhanced their understanding of the lessons (Ou et al., 2019). Perceived increased student engagement helps to facilitate learning outcomes of students in an online learning platform.

Virtual learning has seen tremendous growth and implementation in schools over the past decade and has become a viable option for student education with large financial impact on schools and state budgets. The effects of online learning are the focus of research in education and include teacher engagement, learning effects, student perceptions, factors that determine success, and reasons students drop online courses (Borup et al., 2014). This qualitative study studied the effect of teacher presence in online schools. The research question for this study was: What elements are the core of teacher engagement? The study interviewed teachers in an online school and then analyzed those elements through constant comparison coding. While these effects vary among students, they have also evolved through time with technological advancements and student experiences.

Curriculum advances have been ongoing in virtual learning over the last couple of decades, but the role of the teacher in virtual learning has a profound effect on virtual learning and its effectiveness (Borup et al., 2014). One qualitative study conducted in Utah focused on the role of the teacher in virtual learning. The school that was the subject of the study provided instructors with predesigned content and learning activities, so teachers did not have to focus on developing content. Instead, teachers focused on creating a safe and nurturing learning environment. Teachers motivated students to engage in learning activities. This study examined the critical component of teacher engagement in student success in an online high school. This engagement identified effective teacher practices at the Open High of Utah, which is a successful

online charter school in Utah. It was found that teachers worked to improve student outcomes by designing and organizing learning activities, facilitating discourse with students and parents, providing students with one-on-one instruction, nurturing a safe and loving learning environment, motivating students to engage in learning activities, and closely monitoring student behavior and learning (Borup et al., 2014). This study touched on an important concept for any form of learning: teacher engagement is essential for learning.

Online learning has taken the perceived distance away from traditional face-to-face learning and has opened educational models around the world. Education is now accessible to anyone with a computer and internet connection, and this is evident around the world with wide-ranging effects. Web-based instruction has positive effects on interactive learning, and has remarkably positive effects on interactive learning (Chou, 2013). Researchers looked at web-based instruction in the competitive educational market of Taiwan. The research question for this study was: What are the effects of Web-Based Instruction on Interactive Learning? A survey was used for the purpose of this study. Data was collected and analyzed through factor analysis and multiple regression analysis. This qualitative study found that online learning has positive effects on preschool students within this region. In Taiwan, as in much of Asia, the market for education has become very competitive, and this study investigates the competitive climate in this part of the world to get an indication of the nature of the origin of competition in education. This study also focuses on the 21st century skills that are needed to have a positive impact on education in a global economy.

One of the effects of virtual learning that is evident in schools around the country is the attrition of students who will continue their educational experience in a virtual learning environment. Students are dropping online courses and both the students and the teacher agree

that the reasons often include scheduling and time constraints, academic rigor of class and motivation, technology problems, problems with online medium and lack of teacher immediacy, and parental influences (Varre et al., 2014). The research questions for this study were: What are the reasons that rural high school students may drop out of an advanced online course? Do the reasons that rural high school students may drop out of an advanced online course involve students, online teachers, on-site facilitators, and/or others? Are the reasons given by students for dropping out similar to or different from on-site facilitators' reported reasons for student dropout? Can the factors involved in dropping out be addressed by students, online teachers, on-site facilitators, or others in order to prevent or reduce dropout? Data was collected through student email statements on why they dropped the course and were then coded and imported into the MAXQDA software. This qualitative research focuses on the reasons that students dropped out of an online course in a rural K-12 district. The purpose of the study was to investigate problems affecting rural schools. This study was done through questionnaires completed by students and their teachers. Researchers conducting the study found that 39% of the students who began an advanced placement course dropped out of the class shortly after beginning primarily for the reasons stated above.

Rural education has embraced virtual learning to help provide solutions to long-standing issues affecting rural districts which include experiences and connection issues. Rural education has turned to web-based instruction, or online classes, to provide opportunities for students who do not have access to diverse curriculum and often teachers. Research by Vasquez and Seriann (2012) shows an ever-changing landscape as technology evolves. This study focused on the primary question of whether the success of students with disabilities is often determined due to a lack of resources, qualified teachers, and advanced course work. The study focused on the role

that distance education plays on students with disabilities measured by student achievement. The differentiated approach of distance education allowed students with disabilities in rural areas the opportunities needed to raise achievement scores. This article demonstrated how web-based instruction meets the needs of rural students with disabilities by providing opportunities to students with different life experiences and access to the outside world.

A study on targeting disciplinary practices in an online learning environment was conducted which targeted diverse ways scientists construct and evaluate knowledge. Engaging students in science has been a challenge in an online setting. The research questions for this study were: In what ways did the teacher-learners engage and persist in disciplinary practices in an online, mostly text-based environment? What instructional supports and design choices facilitated their engagement? This study focused on identifying various ways of engaging students in an online format. Data for this qualitative study was collected from InterLACE and analysis was conducted using a discourse analysis tools. The research found that students' engagement in the online format varied according to online practices. Responding to the needs of the learners has shown the greatest impact on student engagement is through students determining their learning outcomes and mode of delivery. This study showed the possibility of addressing disciplinary practices online through responsive teaching (Jaber et al., 2018). The purpose of this study showed that student engagement and response to the needs of online learners are important effects on student learning through responsive teaching. The use of responsive teaching by teachers is needed in response to students setting their own learning outcomes.

A qualitative study conducted by Barbour, Clark, Siko, DeBruler, and Bruno (2019) examined state-level departments of educations models for past and present evaluation of online

courses. The states that are included in this review were Georgia, Maryland, California, Washington, and Colorado. The purpose of this study was to identify potential models and key guidelines for states to consider when developing policies that ensure quality online education. The research questions for this study were: 1. What are individual state policies and practices related to initial online learning approval. 2. What are individual state policies and practices related to on-going online learning evaluation? The data in this study was collected from case studies that were chosen as it closely matched the needs of the study as each state represents an individual unit within the United States. The data from these case studies were extant document for qualitative analysis and provided state-by-state view of current legislation which was the focus of the study. Following the document analysis, a web-based survey was sent to Department of Education officials. All data collected was coded using open coding. The results of the study found great variation among states in their policies where the researchers feel that models should be disseminated to states in areas such as course provider approval and ongoing course evaluation. In state policy analysis, the researchers found that states must consider when looking to implement new approval measure or critically evaluate existing measures that five things must be considered: level of evaluation and approval, approval requirement, geographic reach, mode of instruction, and approval and evaluation procedure (Barbour, Clark, Siko, DeBruler, and Bruno (2019). The overall theme of this studies recommendations are that rigorous monitoring and performance requirements should allow states to ensure that full time programs are of high quality.

A qualitative study took place in Hong Kong comparing blended learning design and face-to-face classes. The purpose of the study was to evaluate whether or not blended learning design affects student outcomes. This study focused on data collection strategies, student surveys

of perception, and analysis of assessment evidence of student learning outcomes (McNaught et al., 2011). The research question for this study was: What are the relationships between features of online learning design and student learning outcomes? The study determined that student engagement was increased through blended learning and that there is no relationship between learning design and student performance, possibly because of the lack of limited assessment data that was examined. A majority of correlations that link student perceptions of the student experience on the web environment are positive and significant, with connections between the perceived and actual learning outcomes of these students in courses The study also indicates that the effects of the web on student learning outcomes would be greater if the web components would be used more often.

Instructor interaction with the students plays a very large role in traditional and blended learning environments. This qualitative study focused on interactions of the participants on three different levels. Researchers looked at the correlation between these relationships and student satisfaction (Kuo et al., 2014). The research questions for this study were: 1. How are student characteristics and personality associated with the three types of interaction and satisfaction? 2. To what extent do these three types of interaction correlate with satisfaction? 3. Are all three types of interaction significant predictors of satisfaction? 4. What is the unique contribution of the significant predictors of class satisfaction (Kuo et al., 2014)? They found a significant correlation between perceived instructor-learner interactions and satisfaction and as perceived learner interaction increased, so did the satisfaction of the learner. Actual learner-learner interaction and learner-instructor interaction, however, were not significant predictors of satisfaction. This study focused on the perception that K-12 teachers have on blended learning on their learning environment. The researchers sought to determine what surveyed K-12 teachers

feel are predictive and important measures in student learning. These levels were found to be influenced by the personality make-up of the students.

A quantitative study conducted in Uganda looked at the effectiveness of a blended learning environment by analyzing the relationships between student background, design features and learning outcomes (Kintu et al., 2017). The focus of the study is on examining the effectiveness of blended learning which takes into consideration learner characteristics/background, blended learning design elements and learning outcomes and how the former are significant predictors of blended learning effectiveness. The research questions for this study were: 1. What are the unique student characteristics and blended learning design features for an effective blended learning environment? 2. Which factors (among the learner characteristics and blended learning design features) predict student satisfaction, learning outcomes, intrinsic motivation and knowledge construction? In this study, the researchers surveyed 238 respondents on student characteristics and background design features along with learning outcomes. The design used descriptive statistics for the student characteristics while employing the use of t-tests. The results of the study showed that how blended learning features are designed and delivered in educational settings and student characteristics predicted student satisfaction. The results also showed that these same design features are predictors of learning outcomes for blended learning. The study found that an effective blended learning environment is necessary in a regional education consortium that uses pedagogical approaches through the use of technology in teaching and learning. The limitations of this study in Uganda on blended learning focused on the shock and newness of technology advancements in a developing world. The authors call for further research to determine if these factors do influence the impact of blended learning over time.

A Meta-Analysis of blended learning was conducted by Means et al. (2013), and in this Meta-Analysis of research, the authors worked to find a statistical synthesis of studies contrasting student outcomes in fully blended or online programs and those with face-to-face instruction. The research included students from primary education through learners in graduate programs and employed experimental studies using random assignment and quasi-experimental design with statistical control for preexisting group differences. The analysis found that blended and online instruction do not differ significantly from regular classroom instruction in terms of learning outcomes. The significance of this study is important as this study shows that blended learning has raised expectations for the effectiveness of online learning which will help to have students and teachers move away from face-to-face instruction into a blended format. The researchers in this study do acknowledge that studies using blended learning often involve additional learning time and that further research is needed on the experimental research of various kinds of learners.

American College Testing (ACT)

The ACT test continues to be used by higher education, state, and local education entities to measure student achievement. Tests like the ACT are high stakes tests that have become almost exclusive in determining student achievement and are the norm around the country. Possible sources of the similarities and differences among different achievement measures are discussed, along with implications for measurement among gifted students. State assessments and ACT tests measure similar achievement.

The research provided by Adelson and Dickenson (2016) provided empirical evidence to support that achievement scores derived from teachers' interactions with students such as grade point average, reflect elements of the achievement construct other than what is reflected in large-

scale assessments. The purpose of this study are that it demonstrates how confirmatory factor analysis (CFA) can be used to understand the similarities and differences among multiple commonly used measures of student achievement. This study was a meta-analysis and uses data from all public high school in a state in the southwest. Data analyses were performed using correlation coefficients and standard deviations reported for all 10th- and 11th-grade students who were tested during the 2007 and 2008 school years. This study also has its flaws, as this study relied upon students self-reporting their grades. If a student's self-reported scores were inflated, this would throw the data and the correlation off on the other factors used in this study. This puts the accuracy of the study at risk and should be considered for future research.

ACT scores have been researched among different subgroups. One quantitative study focuses on ACT scores within the state of Texas. The readiness of all students for higher education in Texas high schools and the disparity in academic achievement among black, Hispanic, white, and Asian students were examined over a 10-year period. The purpose of this study was to examine the college-readiness rates of Black, Hispanic, White, and Asian students of public secondary schools in Texas using data from the Texas Education Agency (TEA) Academic Excellence Indicator System. The following questions were addressed in this study: What is the difference in ACT averages as a function of ethnic membership (i.e. Black, Hispanic, White, and Asian)? and What is the trend, if any, in the gap in ACT averages as a function of ethnic membership (i.e., Black, Hispanic, White, and Asian)? In each of the 10 school years (i.e., 2001-2002 through 2010- 2011), a clear improvement in achievement by student ethnicity was present. This quantitative research study analyzed the past ten years of Texas student data on ACT among racial and gender lines to determine college readiness throughout the state. The average ACT scores was highest for Asian students, followed by white students, then Hispanic

students, and finally black students. The effect sizes for these statistically significant differences were very large. Over the ten-year period of analyzed data, the academic achievement gaps were consistent (Harvey et al., 2013). This research study analyzed the past ten years of Texas student data on ACT among racial and gender lines to determine college readiness throughout the state. The research completed in this article showed the difference in readiness among all students in these groups. The data showed that students were not significantly improving their college readiness throughout the ten-year time span despite the various approaches that Texas has implemented in educational reform and policy.

Research on ACT scores has revealed that gaps exist when comparing sex, race, and ACT sub scores. In 2011, researchers conducted a quantitative study on these gaps. This quantitative research study examined the reaching achievement gaps on the ACT between 11th grade boys and girls over a four-year time in a Midwestern state. The research showed that across all years and all groups, girls outperformed boys on the literature/arts reading subtest on the ACT; however, boys tended to outscore girls on the social/studies and science subtest. The study found a significant relationship between gender, race/ethnicity, and ACT reading sub scores. There is a significant mean difference in the overall reported public-school ACT reading scores between regular education girls and boys and those girls and boys with an Individualized Educational Plan (Curry, 2011).

Another study focuses on the variables of race and parental involvement and how they affect ACT scores. The parental involvement of students taking the ACT test has been the focus of multiple studies affecting student ACT scores (Kaniuka, 2014). This study used a quasi-experimental design which used a multilevel regression modeling. The research questions for this study sought to answer: 1. What if any relationships exist between school district factors and

school achievement as measured across select ACT performance scores? 2. Is there a difference between traditional and early college high schools when district and school level factors are considered; that is, isECHS more college ready? Descriptive statistics were computed from the data to report the means, standard deviation, percentages, and counts for each of the parameters used in the analysis. Data were analyzed using a two-level linear mixed model with a random intercept and random slope for high school type District factors are related to school level performance where student race and parental education levels were found to be significant predictors of achievement. Traditional school factors of race and student socioeconomic status did significantly predict ACT scores. In a high school reform model, students attending early college high schools scored higher on the ACT as compared to students in traditional high schools (Kaniuka, 2014). The limitations on this study are that wealth has many branches and roots that spread out to many different areas. This is an area that needs further study and evaluation.

Summary

The research in blended learning and preparation for standardized tests, in particular the ACT test, is used throughout our country for college admission, determination of a student's college readiness, and determination of a student's career readiness. Test preparation has long been utilized and conceptualized in research as standardized tests have become high stakes for students and schools alike. The research used in this study has shown that test preparation has increased ACT scores in a variety of different studies. School districts are looking to provide opportunities for students to achieve higher scores on these high stakes tests, and students are welcoming the opportunity to be better-prepared. With advancements in technology, many

school districts are turning to online learning management systems to provide resources in a cost-effective manner.

Virtual learning platforms in education are changing faster than schools can adapt. The pace by which technology advancements have evolved has created gaps in literature as the research has not been able to keep up with this pace. Virtual learning platforms in schools are being used as an ever-increasing model for delivering education to students. As students become more accustomed to online learning and digital learning platforms, the way we educate students evolves along with them. The literature indicates that some students have benefited from virtual learning as their chosen learning path. The research further relates that virtual learning may benefit student learning overall and cross-curriculum. The research on ACT as a sole determining effect for college readiness is not evident in existing research along with the discrepancy that exists in ACT scores amongst subgroups in many studies. School districts around the country could potentially use online college preparation classes to improve student ACT scores, which would benefit students; suggestions for future research on this topic would include gender, race/ethnicity, parental support, socioeconomic status, school experience, student attitudes, and technology accessibility/training. Research on college readiness has also shown that there is no single determination of what makes a student college ready. The research also shows that other factors including parental influence have a positive impact on college readiness. Student subgroups for minorities are also effected by the standards used to determine college readiness. These are all factors worthy of future research that were not discussed in this review, and all play a part in student success in education.

Chapter III. Methodology

This study focuses on students meeting the pathway for graduation by earning a remediation-free score on a college readiness test, and specifically in this case, the ACT. Students within the study completed an GradPoint class through the regional education consortium in northwest program. Utilizing the theoretical constructs of the reviewed literature and outlines set forth by the Ohio Department of Education, this study researched the impact ACT practice test completion had on students enrolled in school districts within the regional education consortium in Northwest Ohio on the state-mandated ACT test that all juniors take through the school-sponsored ACT testing date each spring.

This study addresses four essential research questions: (a) Does Pearson GradPoint ACT Prep course significantly increase a student's ACT score within the regional education consortium in Northwest Ohio? (b) What impact does Pearson GradPoint ACT Prep have on improving ACT scores for students of various races, genders, and economical backgrounds within the regional education consortium in Northwest Ohio? (c) What impact does the Pearson GradPoint ACT Prep have on students with disabilities? (d) What impact does Pearson GradPoint ACT Prep course have on helping students to be remediation-free for college? This chapter will consist of the following components essential to Chapter 3 of this study: Research Design, Participants, Instrumentation, Data Collection, and Data Analysis.

Research Questions

This study will focus on the impact that the Pearson ACT online curriculum has on improving ACT scores. The following research questions will look to address the different factors integrated within this topic to determine the effect they have on student ACT scores.

1. Is participation in Pearson GradPoint ACT Prep Course associated with higher ACT scores within the regional education consortium in Northwest Ohio?

2. What impact does Pearson GradPoint ACT Prep course have on ACT scores with respect to race, gender, and economic status of students within the regional education consortium in Northwest Ohio?
3. What impact does Pearson GradPoint ACT Prep course have on ACT scores of students in the regional education consortium in Northwest Ohio on an Individualized Education Plan (IEP)?
4. What impact does Pearson GradPoint ACT Prep course have on helping students to be remediation-free for college?

Research Design

This research was conducted using a Quantitative paradigm that is quasi-experimental in design. The quasi-experimental design compared student ACT scores within the regional education consortium in Northwest Ohio who have taken the Grad Point class with a control group of students who did not take the GradPoint class. This design was accomplished through the use of data collected through established data sources and student information systems currently being used by districts within the regional education consortium in Northwest Ohio. The data sources used come from the student information system PowerSchool, which contains detailed student information but allows for directory information upon request to the public. The other data source is the Connexus platform, which like PowerSchool is available for directory information only to the public. This available information allowed for a statistical analysis of the data.

Participants

This study was conducted using data from 11th grade students within the 53 member districts of the regional education consortium located in Northwest Ohio. A stratified random sampling of these students was used for this study. An unequal number of sampled data sets of these 11th grade students were broken up into two groups: those who took the Pearson GradPoint ACT Prep class and those who did not. Students who took the GradPoint class were enrolled in the online class through their local district prior to taking the state-mandated ACT test offered by the selected district testing window in the spring of the students' junior year. All 11th grade students are required to take the test either on this date or on one of the make-up dates determined by the district. The sample of students in both groups will be comprised of students of different gender, race, socio-economic status, and cognitive identification. This study takes into consideration the ethical protections for the participants that are in line with research ethics and the IRB process at the University of Findlay. All student data is not identifiable to any of the students who participated in this study. At no time will the researcher have access to personally identifiable information for any of the participants being used in this study.

Instrumentation & Data Sources

Data for this study was collected through two established databases that are used by the districts within the regional education consortium in Northwest Ohio. District permission for the collection of data will be determined by each school district administrator. The first data source used is the Conexus Management system which every district in the regional education consortium in Northwest Ohio uses to manage the Pearson GradPoint classes that students take under the host district URL. Pearson-Connexus (2018) provides student-centered learning through districts by building a digital learning experience that customizes learning for the district and student, and provides professional development and training, courses, curriculum,

instructional services, program management, and support. The second data system that was used is the PowerSchool Student Information System. PowerSchool is the main student information system used by districts within the regional education consortium in Northwest Ohio. PowerSchool (2018) covers administrative needs such as scheduling, attendance, state compliance reporting, data management, faculty management, emergency/medical and health management, registration and more. The information that PowerSchool reports allows districts to accurately provide critical district information on demand and empowers schools and districts to report a variety of data sources and to build custom reports to analyze data. The Conexus Management system data is then integrated into the PowerSchool Student Information System on a nightly basis.

Data Collection

Data from the Conexus Management System and the Power School Information System will be collected through an extraction of information placed into a template designed to capture the data used for this study (Appendix A). Data collected through this template will include the following: GradPoint Completion in each of three core subjects (Math, Science, Language Arts), ACT scores from the spring test, gender, race, socio economic status, and whether a student is on an Individualized Education Plan (IEP). All student data will be anonymous, and all participants' identifiable information will not be included in the collection of data. Authorized district personnel will complete the template process when data has been updated into the PowerSchool Student Information System. An email and letter were sent to all participating schools within the regional education consortium in Northwest Ohio in February of 2019, and a follow up email and letter was sent upon the return of the schoolwide ACT test results along with the template for collection of data.

Data Analysis

The results of the study and data were analyzed to determine what impact the Pearson GradPoint Prep class had on students' scores on the school-sponsored ACT test given in the spring to every junior. There is a specific data analysis plan for the data set associated with each research question. A Bonforroni Correction was then conducted on each of the research questions.

1. Is participation in Pearson GradPoint ACT Prep course associated with higher ACT scores within the regional education consortium in Northwest Ohio?

A t-test was used to compare the ACT scores from students who took the GradPoint Class and those who did not. The t-test will determine if there is a significant difference in the ACT scores of those students who took the GradPoint class and those students who did not.

t-Test: Paired Two Sample for Means

2. What impact does Pearson GradPoint ACT Prep course have on ACT scores with respect to students' race, gender, and economic status within the regional education consortium in Northwest Ohio?

A regional education consortium in Northwest Ohio test will be conducted for research question number two. The single factor test was used to determine whether there are any statistically significant differences between the means of ACT scores of those students in the areas of race, gender, and economic status in both categories of 11th grade students who took the GradPoint class and those who did not take the class. The determination of whether a significant difference exists will compare the p-value to the null hypothesis with significance level of .05 used.

3. What impact does Pearson GradPoint ACT Prep course have on ACT scores of students in the regional education consortium in Northwest Ohio who are on an Individualized Education Plan (IEP)?

A t-test was conducted for research question three. The single factor test was conducted to determine if there is a significant difference in the ACT scores of students with disabilities between those students who took the GradPoint class and those students who did not. The p-value of the mean will be compared to the null hypothesis with a significance level of .05 being used.

A stepwise regression model was also run with all independent variables used in this study. This stepwise regression determined the correlation between the independent variables and how predictable that independent variable is on ACT scores.

4. What impact does Pearson GradPoint ACT Prep course have on helping students to be remediation-free for college?

The data analysis for research question four will be a descriptive analysis of results from the first, second, and third questions. This descriptive analysis of the population sets of ACT scores of those who took the GradPoint class and those who did not will be comparative to the standards set by the Ohio Board of Regent's definition of remediation-free. These include a score of 18 on the English test, a 22 on the Reading test, and a 22 on the Math test. Results of the descriptive analysis will be compared in a table.

Assumptions

This study assumes that all students in this study will come from the same region of Ohio and have a similar educational background based upon the standards set forth by the State of

Ohio and the Ohio Department of Education. This study also assumes that while all students in the 11th grade are required to take either the ACT (or SAT) test, not every student is required or encouraged to take the GradPoint class by the local districts in which they are enrolled. The culture of each district and the classes and curriculum in which students are enrolled will be vastly different compared to the opportunities and accessibility to different curriculum within the individual district. Previous research has shown that parental impact has an impact on ACT scores. This study also assumes that a student's family structure at home has an impact on the value, attitudes, and importance of the ACT test and its impact on their college readiness. This study assumes that all students will try their best on the ACT test and will try their best in the classes in which they are enrolled. Finally, this study assumes that not all districts within the regional education consortium in Northwest Ohio will participate in this study due to the different time frames that districts use in submitting data into PowerSchool for completion of student transcripts.

Chapter IV. Results

This study investigates the effects of the online curriculum provider Pearson's GradPoint on 11th grade students' ACT growth within a regional educational consortium in northwest Ohio. This study is based upon the need of public schools in the state of Ohio to raise ACT scores of students above the remediation free scores as one way for students to graduate. Data from this study was collected from rural public schools in northwest Ohio who have formed a consortium for curriculum using Pearson's online Conexus platform for the purpose of providing online curriculum for the member districts.

Instrument Validity and Reliability

The ACT test continues to be used by higher education, state, and local education entities to measure student achievement. Tests like the ACT are high stakes tests that have become almost exclusive in determining student achievement and are the norm around the country. Possible sources of the similarities and differences among different achievement measures are discussed, along with implications for measurement among gifted students. State assessments and ACT tests measure similar achievement.

The ACT test has been a scientific tool that has been used by colleges for decades to measure a student's knowledge for the rigor of higher education. Students across the country use their ACT scores for college admission, obtaining scholarships, and even being assigned to remedial classes and are often taking the test multiple times (Moss et al., 2012). Recently, ACT data has been used outside of that indication to determine if schools are improving education to their students as an assessment tool. The data derived from ACT tests are then used to make assumptions about the validity and rigor of the education taking place. Too often, educational reform is driven by legislature instead of by educators. The impact of such legislation has caused

the educational process to be in flux as reform is implemented and then changed. Too often, educational reform promoted through the legislative process has not improved ACT scores across the lines of gender and race (Harvey et al., 2013). The ACT test has been a staple in terms of assessment for higher education and the use of the test for determining high school graduation has been questioned.

While the ACT test has been widely used for admission into higher education, there is research that has been conducted showing that gaps do exist when comparing sex and race. One such study conducted by Harvey et al. (2013) found the differences in preparedness on the ACT differed by ethnicity. Another study conducted by Curry (2011) found that significant relationships in ACT scores between gender and ethnicity while the same study found there is a significant difference in scores amongst students on Individual Education Plans.

Characteristics of the Sample

School districts from Northwest Ohio were asked to contribute existing data held within their Student Information System (SIS) and within their Conexus management system. The data submitted by the school districts were in electronic format and included directory information. Included in the data were ACT scores of 11th grade students from 2016-2018. The public schools included in this study are considered small to medium sized rural districts located in Northwest Ohio. These schools range in size from 32 students per class to 155 students per grade. The public school districts in this sample belong to a consortium of schools in Northwest Ohio that have come together for purchasing power to offer an online platform of curriculum and classes for their district. One such class offered through Pearson Grad Point is ACT Prep Class. This online class is an asynchronous learning platform where the online curriculum addresses different headings in each of the ACT subject tests that students must work through the

progression of the unit where assessments are taken; students must reach a certain threshold to move on.

This study used t-tests for Research Questions 1, 2, and 3. In these t-tests, a Bonferroni correction was used to adjust the (p) values due to the increased risk of a type 1 error due to multiple t-tests that were conducted. A linear regression test was conducted to explain the relationship between the dependent variable of ACT tests and the independent variables of gender, race, economic disadvantage, and whether the student is on an IEP.

An excel template for downloading data from the information systems was emailed to fifty-two school superintendents from Northwest Ohio with eight of those districts returning the completed template. The data was collected from the 2016, 2017, and 2018 school years for directory information. The directory information included race, gender, economic disadvantaged, IEP, ACT Prep, and ACT scores. A total of 1859 samples were included. In 2018, eight hundred and thirty-nine students were included in the study with seven hundred twenty-nine students in 2017, and two hundred ninety-one students in 2016. Eight hundred sixty males were included in this study along with nine hundred seventy-one females with twenty-seven students who did not provide this data. The ethnicity of the subjects included one thousand six hundred and forty-one students who identified as Caucasian and one hundred and eighty were identified as non-Caucasian, while twenty-nine students' ethnicity was not provided. Two hundred seventy-eight subjects in this study identified as economically disadvantaged, while 1581 students were not economically disadvantaged. Two hundred 48 students in the study were on an IEP, while one thousand six hundred and thirty-six students were not on an IEP. There were 148 students who took the GradPoint ACT Prep class, while students did not take the ACT Prep course. Ultimately, there were subjects with ACT scores.

Table 1

2016-2018 Subject Participation

Independent Variable	Number of Subjects	Percent of Subjects
Gender Male	860	46.26%
Gender Female	971	52.23%
Ethnicity Caucasian	1641	88.27%
Ethnicity Non-Caucasian	180	9.68%
Economically Disadvantaged	278	14.95%
Non-Economically Disadvantaged	1581	85.05%
IEP	223	12%
Non IEP	1636	88%
GradPoint	148	7.96%
Non-GradPoint	1711	92.04%
Total	1859	100%

Note. Not all schools supplied all directory information, but all ACT data was reported for students.

Research Question 1

Research question one states: Is participation in Pearson GradPoint associated with higher ACT scores within the regional education consortium in Northwest Ohio? This research question was investigated through the sampling of student data on their participation scores from 2016, 2017, and 2018, from public school districts in Northwest Ohio. In 2018, 28 eleventh grade students were reported to have taken the GradPoint class for the purpose of this study. There were 809 eleventh grade students with reported ACT data. In 2018, students who took the

GradPoint class had a lower mean ACT score than the control group of students who did not take the GradPoint class. The twenty-eight students who took the GradPoint class had a m=15.71 while the 809 ACT scores who were the dependent variable in the study had a m=19.79. The t-statistic for this test was t= -4.29 with a df= 835. The results of the p two-tail=.002, which for the 2018 data Rejected the null hypothesis that there is no difference in the ACT score of students who took the GradPoint class and those who did not.

In 2017, the data included 46 students who took the GradPoint class, while 643 students did not take the GradPoint class. Students who took the GradPoint class had a lower mean ACT score than those students who did not take the GradPoint class. The students who took the GradPoint class had a m=20. The students who did not take the GradPoint class had a m=20.74. The 2017 t-test had a t-statistic=-.94 and a df=687. The p=.35 was greater than .05 which for the 2017 school year Failed to reject the null hypothesis that there is no difference in the ACT score of students who took the GradPoint class and those who did not.

In 2016, 22 students took the GradPoint class while 245 students did not take the GradPoint class. The students who took the GradPoint class had a lower mean on the ACT than the students who did not take the GradPoint class. The students who took the GradPoint class had a m=20.41 while the students who did not take the ACT class had a m=20.56. The t-test conducted had a t-statistic= -.15 and a df=265. The p=.87 which is greater than the .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of students who took the GradPoint class and those who did not.

Table 2

GradPoint Significance

Year	GradPoint				ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	22	20.41	-.15	265	245	20.56	.88	Failed to reject the null hypothesis
2017	643	20	-.94	687	20.74		.17	Failed to reject the null hypothesis
2018	28	15.71	-4.29	835	809	19.79	.002	Reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of students who took the GradPoint class and those who did not.

Note. A Bonferroni correction was conducted with alpha level being set at .017 for Research Question 1.

Research Question 2

What impact does Pearson GradPoint Prep have on ACT scores with respect to a student's race, gender, and economic status within the regional education consortium in Northwest Ohio? A series of t-tests were conducted on each of the factors expressed in research question 2 to determine the significance of the GradPoint class on race, gender, and economically disadvantaged for 2016, 2017, and 2018. Race was broken up into two groups with one group being Caucasian and the other being non-Caucasian. Gender was broken up into two groups with one group being Males and the other being Females. The third and final group tested were the students who were economically challenged. This group was broken into those who were economically challenged and the other being those that are not economically

challenged and is based upon the federal poverty level of 185%. Students whose family income is greater than 185% are considered non economically disadvantaged. This data is self -reported and verified through the national lunch program guidelines.

In 2018, Caucasian students who took the GradPoint class in this study resulted in 23 observations, while students who did not take the GradPoint class resulted in 702 observations. Students who did not take the GradPoint class had a higher mean ACT score than those students who did. The students who took the GradPoint class had a m=16.13. Students who did not take the GradPoint class had a m=20.14. The t-test had a t-stat= -3.75 and a df=723. The p=.0001 which is less than the alpha .05 which Rejected the null hypothesis that there is no difference in the ACT score of Caucasian students who took the GradPoint class and those who did not.

Non-Caucasian students who took the GradPoint class in this study resulted in six observations while students who did not take the GradPoint class resulted in 84 observations. Students who did not take the GradPoint class had a higher mean ACT score than those students who did. The students who took the GradPoint class had a m=14.67. Students who did not take the GradPoint class had a m=16.76. The t-test had a t-stat=-1.57 and a df=88. The p=.12 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of non-Caucasian students who took the GradPoint class and those who did not.

In 2017, Caucasian students who took the GradPoint class in this study resulted in 40 observations, while students who did not take the GradPoint class resulted in 632 observations. Students who did not take the GradPoint class had a higher mean ACT score than those students who did. The students who took the GradPoint class had a m=20.13. Students who did not take the GradPoint class had a m=20.87. The t-test had a t-stat= -.089 and a df= 670. The p=.38 which

is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of Caucasian students who took the GradPoint class and those who did not.

Non-Caucasian students who took the GradPoint class in this study resulted in 17 observations, while students who did not take the GradPoint class resulted in 57 observations. Students who did not take the GradPoint class had a higher mean ACT score than those students who did. The students who took the GradPoint class had a m=18.53. Students who did not take the GradPoint class had a m=18.7. The t-test had a t-stat= -.14 and a df= 72. The p=.89 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of non-Caucasian students who took the GradPoint class and those who did not.

In 2016, Caucasian students who took the GradPoint class in this study resulted in nineteen observations, while students who did not take the GradPoint class resulted in two hundred and fifty-one observations. Students who did not take the GradPoint class had a higher mean ACT score than those students who did. The students who took the GradPoint class had a m=19.89. Students who did not take the GradPoint class had a m=20.66. The t-test had a t-stat= -.78 and a df= 268. The p=.44 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of Caucasian students who took the GradPoint class and those who did not.

Non-Caucasian students who took the GradPoint class in this study resulted in three observations, while students who did not take the GradPoint class resulted in sixteen observations. Students who did not take the GradPoint class had a lower mean ACT score than those students who did. The students who took the GradPoint class had a m=23.67. Students who did not take the GradPoint class had a m=18.69. The t-test had a t-stat= - 1.60 and a df=17.

The p=.13 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of Caucasian students who took the GradPoint class and those who did not.

Table 3

Caucasian GradPoint Significance

Year	Caucasian GradPoint				Caucasian Non Prep ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	19	19.89	-.78	268	251	20.66	.44	Failed to reject the null hypothesis
2017	40	20.13	-.89	670	632	20.87	.375	Failed to reject the null hypothesis
2018	23	16.13	-3.75	723	702	20.14	.001	Reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of Caucasian students who took the GradPoint class and those who did not.

Note. A Boneferroni correction was conducted with alpha level being set at .017 for Research Question 2

Table 4

Non-Caucasian GradPoint Significance

Year	Non-Caucasian GradPoint				Non-Caucasian ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	3	23.67	1.6	17	16	18.69	.12	Failed to reject the null hypothesis
2017	17	18.53	-.14	72	57	18.7	.89	Failed to reject the null hypothesis
2018	6	14.67	-1.57	88	84	16.76	.12	Failed to reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of non-Caucasian students who took the GradPoint class and those who did not.

Note. A Bonferroni correction was conducted with alpha level being set at .017 for Research Question 2.

In 2018, male students who took the GradPoint class in this study resulted in fourteen observations, while males who did not take the GradPoint class resulted in four hundred thirteen observations. Males who did not take the GradPoint class had a higher mean ACT score than those males who did take the GradPoint class. The males who took the GradPoint class had a m=15.36. Males who did not take the GradPoint class had a m=19.59. The t-test had a t-stat= -3 and a df= 425. The p=.003 which is less than the alpha .05 which Rejected the null hypothesis that there is no difference in the ACT score of male students who took the GradPoint class and those who did not.

Female students who took the GradPoint class in this study resulted in fourteen observations, while females who did not take the GradPoint class resulted in three hundred and ninety-seven observations. Females who did not take the GradPoint class had a lower mean ACT score than those females who did. The students who took the GradPoint class had a m=16.07. Females who did not take the GradPoint class had a m=19.93. The t-test had a t-stat=-3.02 and a df= 409. The p=.002 which is less than the alpha .05 which Rejected the null hypothesis that there is no difference in the ACT score of female students who took the GradPoint class and those who did not.

In 2017, male students who took the GradPoint class in this study resulted in 26 observations, while males who did not take the GradPoint class resulted in 321 observations. Males who took the GradPoint class had a higher mean ACT score than those males who did not take the GradPoint class. The males who took the GradPoint class had a m=21.23. Males who did not take the GradPoint class had a m=20.42. The t-test had a t-state= .76 and df=345. The p=.45 which is greater than the alpha .05 which Failed to rejected the null hypothesis that there is no difference in the ACT score of male students who took the GradPoint class and those who did not.

Female students who took the GradPoint class in this study resulted in twenty observations, while females who did not take the GradPoint class resulted in 368 observations. Females who did not take the GradPoint class had a higher mean ACT score than those females who did. The students who took the GradPoint class had a m=18.4. Females who did not take the GradPoint class had a m=20.92. The t-test had a t-stat= -2.22 and a df= 386. The p=.03 which is less than the alpha .05 which Rejected the null hypothesis that there is no difference in the ACT score of female students who took the GradPoint class and those who did not.

In 2016, male students who took the GradPoint class in this study resulted in ten observations, while males who did not take the GradPoint class resulted in 97 observations. Males who took the GradPoint class had a higher mean ACT score than those males who did not take the GradPoint class. The males who took the GradPoint class had a m=21.4. Males who did not take the GradPoint class had a m=20.52. The t-test had a t-stat= .69 and a df= 105. The p=.49 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of male students who took the GradPoint class and those who did not.

Female students who took the GradPoint class in this study resulted in twelve observations, while females who did not take the GradPoint class resulted in 170 observations. Females who did not take the GradPoint class had a higher mean ACT score than those females who did. The females who took the GradPoint class had a m=19.58. Females who did not take the GradPoint class had a m=20.56. The t-test had a t-stat= -.74 and a df= 180. The p=.60 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of female students who took the GradPoint class and those that did not.

Table 5

Male GradPoint Significance

Year	Male GradPoint				Male ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	10	21.4	.69	105	97	20.52	.49	Failed to reject the null hypothesis
2017	26	21.23	.76	345	321	20.42	.45	Failed to reject the null hypothesis
2018	14	15.36	-3	425	413	19.59	.003	Reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of Male students who took the GradPoint Class and those who did not.

Note. A Bonferroni correction was conducted with alpha level being set at .017 for Research Question 2.

Table 6

Female GradPoint Significance

Year	Female GradPoint				Female ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	12	19.58	-.74	180	170	20.56	.46	Failed to reject the null hypothesis
2017	20	18.4	-2.22	386	368	20.92	.03	Failed to reject the null hypothesis
2018	14	16.07	-3.01	409	397	19.93	.003	Reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of Female students who took the GradPoint Class and those who did not.

Note. A Boneferroni correction was conducted with alpha level being set at .017 for Research Question 2

In 2018, economically disadvantaged students who took the GradPoint class in this study resulted in three observations, while students who did not take the GradPoint class resulted in 135 observations. Economically disadvantaged students who did not take the GradPoint class had a higher mean ACT score than those economically disadvantaged students who did. The economically disadvantaged students who took the GradPoint class had a m=14.67. Economically disadvantaged students who did not take the GradPoint class had a m=16.7. The t-test had a t-stat= -.83 and a df= 136. The p=.41 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of economically disadvantaged students who took the GradPoint class and those who did not.

Non-economically disadvantaged students who took the GradPoint class in this study resulted in 25 observations, while students who did not take the GradPoint class resulted in 702 observations. Non-economically disadvantaged students who did not take the GradPoint class had a higher mean ACT score than those students who did. The non-economically disadvantaged students who took the GradPoint class had a m=15.84. Non-economically disadvantaged students who did not take the GradPoint class had a m=20.22. The t-test had a t-stat= -4.40 and a df= 725. The p=.001 which is less than the alpha .05 which Rejected the null hypothesis that there is no difference in the ACT score of non-economically disadvantaged students who took the GradPoint class and those who did not.

In 2017, economically disadvantaged students who took the GradPoint class in this study resulted in 27 observations, while students who did not take the GradPoint class resulted in 173 observations. Economically disadvantaged students who did not take the GradPoint class had a lower mean ACT score than those economically disadvantaged students who did. The economically disadvantaged students who took the GradPoint class had a m=17.89. Economically disadvantaged students who did not take the GradPoint class had a m=16.14. The t-test had a t-stat=2.15 and a df= 98. The p=.03 which is less than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of economically disadvantaged students who took the GradPoint class and those who did not after the Boneferroni correction was applied.

Non-economically disadvantaged students who took the GradPoint class in this study resulted in 27 observations, while students who did not take the GradPoint class resulted in 73 observations. Non-economically disadvantaged students who did not take the GradPoint class had a lower mean ACT score than those students who did. The non-economically disadvantaged

students who took the GradPoint class had a m=17.89. Non-economically disadvantaged students who did not take the GradPoint class had a m=16.14. The t-test had a t-stat= -1.2 and a df= 650. The p=.03 which is less than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of non-economically disadvantaged students who took the GradPoint class and those who did not after the Boneferroni correction was applied.

In 2016, economically disadvantaged students who took the GradPoint class in this study resulted in five observations, while students who did not take the GradPoint class resulted in 136 observations. Economically disadvantaged students who did not take the GradPoint class had a lower mean ACT score than those economically disadvantaged students who did. The economically disadvantaged students who took the GradPoint class had a m=18.8. Economically disadvantaged students who did not take the GradPoint class had a m=18.28. The t-test had a t-stat= .27 and a df= 39. The p=.78 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of economically disadvantaged students who took the GradPoint class and those who did not.

Non-economically disadvantaged students who took the GradPoint class in this study resulted in seventeen observations, while students who did not take the GradPoint class resulted in 231 observations. Non-economically disadvantaged students who did not take the GradPoint class had a higher mean ACT score than those students who did. The non-economically disadvantaged students who took the GradPoint class had a m=20.88. Non-economically disadvantaged students who did not take the GradPoint class had a m=20.90. The t-test had a t-stat= -.01 and a df= 246. The p=.99 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of non-economically disadvantaged students who took the GradPoint class and those who did not.

Table 7

Economically Disadvantaged GradPoint Significance

Year	ED GradPoint				ED ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	5	18.8	.27	39	36	18.28	.79	Failed to reject the null hypothesis
2017	27	17.89	2.15	98	73	16.14	.03	Failed to reject the null hypothesis
2018	3	14.67	-.83	136	135	16.70	.41	Failed to reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of economically disadvantaged students who took the GradPoint class and those who did not.

Note. A Boneferroni correction was conducted with alpha level being set at .017 for Research Question 2

Table 8

Non-Economically Disadvantaged GradPoint Significance

Year	Non-ED GradPoint				Non-ED ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	17	20.88	-.01	246	231	20.90	.99	Failed to reject the null hypothesis
2017	38	20.26	-1.12	650	614	21.19	.26	Failed to reject the null hypothesis
2018	25	15.84	-4.39	725	702	20.22	.001	Reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of non-economically disadvantaged students who took the GradPoint class and those who did not.

Note. A Bonferroni correction was conducted with alpha level being set at .017 for Research Question 2

Research Questions 3

In 2018, students on Individual Education Plans (IEP) who took the GradPoint class in this study resulted in three observations, while students on IEPs who did not take the GradPoint class resulted in 113 observations. IEP students who did not take the GradPoint class had a higher mean ACT score than those IEP students who did take the GradPoint class. The IEP students who took the GradPoint class had a m=14.67. IEP students who did not take the GradPoint class had a m=17.57. The t-test had a t-stat= -1.12 and a df= 114. The p=.27 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of IEP students who took the GradPoint class and those who did not.

In 2017, students on Individual Education Plans who took the GradPoint class in this study resulted in fifteen observations, while students on IEPs who did not take the GradPoint class resulted in 68 observations. IEP students who did not take the GradPoint class had a higher mean ACT score than those IEP students who did take the GradPoint class. The IEP students who took the GradPoint class had a m=14.87. IEP students who did not take the GradPoint class had a m=17.12. The t-test had a t-stat= -1.89 and a df= 81. The p=.06 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of IEP students who took the GradPoint class and those who did not.

In 2016, students on Individual Education Plans who took the GradPoint class in this study resulted in one observation, while students on IEPs who did not take the GradPoint class resulted in eighteen observations. IEP students who did not take the GradPoint class had a higher mean ACT score than those IEP students who did take the GradPoint class. The IEP students who took the GradPoint class had a m=16. IEP students who did not take the GradPoint class had a m=19.5. The t-test had a t-stat= -.84 and a df= 17. The p=.41 which is greater than the alpha .05 which Failed to reject the null hypothesis that there is no difference in the ACT score of IEP students who took the GradPoint class and those who did not.

Table 9

Individualized Education Plan (IEP) GradPoint Significance

Year	IEP GradPoint				Non-IEP ACT		p	Significance
	Students	m	t-stat	df	Students	m		
2016	1	16	-.84	17	18	19.5	.41	Failed to reject the null hypothesis
2017	15	14.87	-1.89	81	68	17.12	.06	Failed to reject the null hypothesis
2018	3	14.67	-1.12	114	113	17.57	.27	Failed to reject the null hypothesis

Note. Null hypothesis is that there is no difference in the ACT score of IEP students who took the GradPoint class and those who did not.

Note. A Bonferroni correction was conducted with alpha level being set at .017 for Research Question 3.

Research Question Four

What impact does Pearson GradPoint ACT Prep course have on helping students to be remediation-free for college? The Ohio Board of Regents has set the cut score for being remediation free for college at the scaled score of twenty-two on the ACT. This study looked at the affect that the Pearson GradPoint program had on improving ACT scores amongst various subgroups.

In 2018, twenty-eight students took the GradPoint class that was included in this study with an average mean score of 15.71 compared to the students who did not take the GradPoint class. In 2017, forty-six students took the GradPoint class with a mean score of 20, while the six hundred and forty-three students who did not take the GradPoint class had a mean score of 20.74. In 2016, the twenty-two students who took the GradPoint had a mean score of 20.41, while the

students who did not take the GradPoint class had a mean of 20.56. During each of the three years of this study, the students who did not take the GradPoint class had a higher mean on the ACT than those students who did take the GradPoint class. Neither demographic of the group achieved a mean score of twenty-two in any of the three years.

Table 10

GradPoint impact on Remediation Free

Year	GradPoint Students Remediation Free	% GradPoint Remediation Free	Non-GradPoint Remediation Free	% Non-GradPoint Remediation Free	Remediation Free Score
2016	6	10.7%	107	26.8%	22
2017	10	21.7%	371	57.7%	22
2018	3	27.3%	217	43.7%	22

Table 11

Descriptive Statistics

Variables	Mean	Standard Deviation	N
ACT	20.23	4.95	1753
Gender	.53	.499	1753
Ethnicity	.10	.296	1753
Economically Disadvantaged	.13	.339	1753
IEP	.12	.321	1753
GradPoint	.06	.241	1753

A Stepwise Regression model was used with the data in this survey to predict the impact on the various subgroups used in this study. The method of a Stepwise Regression is a variable selection procedure for independent variables. The stepwise consists of a series of steps designed to find the most useful independent variables to include in the regression model. As each model is made, the independent variable is evaluated using criteria to see if it should remain in the model or remove the variable that least satisfies the criteria. The data used to satisfy the criteria or to remove it is often the t value. The Stepwise Regression model completed for this study shows that the variable with the highest B coefficient has the highest absolute t value. These values show which independent variables are good predictors of ACT growth, how strong they are, and then ranks each of the variables against one another.

In this regression model, a correlation between a student's ACT score and the independent variables was conducted. A Bonferroni correction was then applied to this study. This correlation found that the year and gender had a lower correlation to ACT scores after the Bonferroni correction was applied. A student's ethnicity, economic status, IEP determination, and GradPoint class participation all had a significant correlation.

This Stepwise model added significant factors into different models one at a time. Model one consisted of the Constant which for this study was the ACT score along with economically disadvantaged students. Model two was made up of the Constant, economically disadvantaged students, and students on an IEP. Model three was the Constant, economically disadvantaged students, students on IEP, and GradPoint students. Model four included the Constant, economically disadvantaged students, students on an IEP, GradPoint, and ethnicity. Model five was the final model and consisted of the Constant, economically disadvantaged students, students on an IEP, GradPoint, ethnicity, and year.

Model four was chosen as the model that showed the biggest predictor on ACT scores. This model included the ACT score, or constant, economically disadvantaged students, GradPoint participation, and ethnicity. In this model, the Adjusted R Square increased from .117 in model three to .129 in model four with the addition of ethnicity to the model. The model then went from.129 in model four to 132 in model five.

Table 12

Correlation Between ACT and Independent Variables

Independent Variable	ACT	Correlation
Year	.01	Low correlation
Gender	.036	Low correlation
Ethnicity	.000	Significant Correlation
Economic Disadvantaged	.000	Significant Correlation
IEP	000	Significant Correlation
B	.000	Significant Correlation

Note. Bonferroni Correction was applied at a .017.

Table 13

Model Four Summary

Model Summary	Model Four
R	.362
R Square	.131
Adjustred R Square	.129
Std. Error of the Estimate	4.621

The coefficient for Model four had the ACT score (constant)=21.310 with a Std Error= .129. Economically disadvantaged students' B=-3.380, which means that students in this independent variable would be predicted to score that much lower than the constant. Students on IEPs would have a B= -2.548. Students who took the GradPoint class had a B= -.439 and students' ethnicity had a B=1.904.

Table 14

Model Four Regression Coefficients

Variables	Unstandardized Coefficients	
	B	Standard Deviation
ACT (Constant)	21.310	.129
Economically Disadvantage	-3.380	.330
IEP	-2.548	.349
GradPoint	-2.439	.460
Ethnicity	-1.904	.378

Summary

One of Ohio's graduation pathways of students achieving a remediation free score on the ACT has sent schools scrambling for ways to increase student achievement on the ACT. The role that schools can play in raising ACT scores has been widely researched since the inception of the ACT test as a screening tool for college admission. What has not been widely addressed in the literature is the impact that online ACT practice courses have on improving ACT scores. This study focused on a consortium of public schools in Northwest Ohio who, through an Ohio Straight A Grant, purchased and ran an online platform in Pearson-Connexus, which included a class called GradPoint designed to better prepare students for the ACT.

This study sought to determine if the GradPoint class did in fact have an effect on improving ACT scores. The subjects of this study were all 11th grade students who were required by the state of Ohio to take the ACT test during their 11th grade school year. This study was

conducted with data derived from public school districts within the consortium of schools over the three-year period of 2016, 2017, and 2018. The data collected included the following categories: ACT scores, GradPoint class, student ethnicity, economically disadvantaged status, gender, and whether the student was on an IEP. Each research question in Chapter Four was conducted using t-tests; the results of the tests were then used to determine the significance that the variable had on each of the control groups. The $p<.05$ was used for all tests in this study with a Bonferroni Correction of $p<.017$.

Table 15

Significance of Variables Summary

Variables	2016 Significance	2017 Significance	2018 Significance	Impact of Significance
GradPoint	Failed to reject null hypothesis	Failed to reject null hypothesis	Reject null hypothesis	No Difference in ACT Class and ACT
No GradPoint	Failed to reject null hypothesis	Failed to reject null hypothesis	Failed to reject null hypothesis	No Difference in ACT Class and ACT
Male	Failed to reject null hypothesis	Failed to reject null hypothesis	Reject null hypothesis	No Difference in ACT Class and ACT except 2018
Female	Failed to reject null hypothesis	Failed to reject null hypothesis	Reject null hypothesis	No Difference in ACT Class and ACT except 2018
Caucasian	Failed to reject null hypothesis	Failed to reject null hypothesis	Reject null hypothesis	No Difference in ACT Class and ACT except 2018
Non-Caucasian	Failed to reject null hypothesis	Failed to reject null hypothesis	Failed to reject null hypothesis	No Difference in ACT Class and ACT
Economically Disadvantaged	Failed to reject null hypothesis	Failed to reject null hypothesis	Failed to reject null hypothesis	No Difference in ACT Class and ACT
Non-Economically Disadvantaged	Failed to reject null hypothesis	Failed to reject null hypothesis	Failed to reject null hypothesis	No Difference in ACT Class and ACT

IEP	Failed to reject null hypothesis	Failed to reject null hypothesis	Failed to reject null hypothesis	No Difference in ACT Class and ACT
Non IEP	Failed to reject null hypothesis	Failed to reject null hypothesis	Failed to reject null hypothesis	No Difference in ACT Class and ACT

Note. Null Hypothesis is that there is no difference in the ACT score of those students who took GradPoint class and those who did not.

A Stepwise Regression model was used to predict what variables included in this study would impact a student's ACT score. The Stepwise Regression created five different models that added in variables based on the strengths of each variable. As variables were added, each models value was affected on which value made the strongest model. The strongest predictor in this test of affecting ACT scores was the variable of being economically disadvantaged. The Adjusted R Square increased from .117 in model three to .129 when economically disadvantaged data was added to the Stepwise Regression.

This study found that on the stepwise regression model that the GradPoint class was a negative predictor on a student's ACT score. The t-test conducted in this same study contradicted the stepwise regression model by determining that there was no evidence that a student's participation in the GradPoint class had an effect on their ACT score. This study has found that there are strong predictors of a student's ACT score and warrant future studies.

Chapter V. Conclusions And Recommendations

This study investigates the effects of Pearson's digital learning solution on the 11th grade students' ACT score improvement in a regional educational consortium in Northwest Ohio, and is based upon the need of public schools in the state of Ohio to raise ACT scores of students above the remediation free scores as one approved graduation pathway. School districts from Northwest Ohio were asked to contribute existing data held within their Student Information System (SIS) and within their Conexus management system. The data submitted by the school districts were in electronic format and included directory information. This chapter starts with a review of the research design of the study and is followed by a discussion of the findings, specified by research questions. After exploring the findings, the final recommendation and opportunities for future research will be evaluated.

Review of the Study

This study focuses on 11th grade students meeting one approved pathway for graduation by earning a remediation-free score on a college readiness test: in this case, the ACT. Schools participating in this study have tested all 11th grade students within their school and also had access to an GradPoint class through a regional education consortium in Northwest Ohio. Utilizing the theoretical constructs of the reviewed literature and outlines set forth by the Ohio Department of Education, this study researched the impact that enrollment in Pearson's GradPoint course had on students within the regional education consortium in Northwest Ohio on the state-mandated ACT test that all students take in spring of their junior year.

This study addresses four essential research questions: (1) Does participation in GradPoint in Pearson correlate with higher ACT scores within the regional education consortium in Northwest Ohio? (2) What impact does the Pearson GradPoint class have on improving ACT

scores for students of various race, gender, and economical background within the regional education consortium in Northwest Ohio? (3) What impact does the Pearson GradPoint GradPoint class have on students with disabilities? (4) What impact does the Pearson GradPoint GradPoint course have on helping students earn remediation-free scores for college?

This study is a quasi-experimental quantitative study conducted with data from public schools in Northwest Ohio who have joined together to provide online educational opportunities for students. One of these courses available to students within the consortium of schools is the Pearson GradPoint Class. This online class is designed to help students to prepare for the ACT test needed for college and utilized in Ohio as a means to meet one pathway for graduation.

This study was conducted using data from 11th grade students within the 43 member districts of a regional education consortium in Northwest Ohio. An excel template for downloading data from the information systems was emailed to fifty-two school superintendents from Northwest Ohio with eight of those districts returning the completed template. The researcher requested the directory information for all 11th grade students for the year that they completed the state mandated spring ACT test from 2016, 2017, and 2018, and focused on the following categories: gender, ethnicity, economically disadvantaged status, participation in the GradPoint class, and each student's spring ACT score. The data received from the districts was extracted from each school's SIS along with the district's Conexus data base. Once the data was extracted into the excel template, the completed template was emailed to the researcher.

Data from the template from each participating school was combined on a single excel spread sheet for 2016, 2017, and 2018. A total of 1859 samples were included. In 2018, 839 students were included in the study with 729 students in 2017, and 291 students in 2016. Eight hundred and sixty males were included in this study along with 971 females and 27 students who

did not provide demographic directory information in regard to gender. The ethnicity of the subjects included 1641students who identified as Caucasian and 180 who were identified as non-Caucasian, while 29 students' ethnicity was not provided. The subjects in this study who identified as economically disadvantaged were 278, while 1581 students were identified as not economically disadvantaged. Two hundred and forty-eight students in the study were on an IEP while 1636 students were not on an IEP. There were 148 students who took the GradPoint class, while 1711 students did not take the GradPoint course. There were a total of 1859 students who had reported ACT scores throughout the three years of this study.

Data from this study was then broken down and reassembled for each research question. Tests on the data were run for each research question in order to best prove the null hypothesis. The dependent variable in this study remained consistent as the ACT scores of the students. The independent variable differed according to the research question.

Discussion

Research Question 1

Is participation in Pearson GradPoint associated with higher ACT scores within the regional education consortium in Northwest Ohio? The researcher ran a t-test on the independent variable of students who took the GradPoint class and the dependent variable of those students who took the ACT for each of the three years. A Boneferroni correction was conducted with the alpha level set at .017. The results of this test in each year of 2016, 2017, and 2018 failed to reject the null hypothesis that the GradPoint class was not a significant factor in determining ACT scores. The results of this study were in contradiction to a study done by Moss (2012) where ACT coaching done in an online format was shown to have improved ACT scores with high school students. The researcher believes that this could be due to the relationship of the

teacher in the learning process instead of the asynchronous model associated in GradPoint. The linear regression conducted on the data has shown that students who took the GradPoint class actually had a negative effect on their ACT scores. Previous studies were conducted using face-to-face ACT coaching or a variety of online models. This study was conducted using just one specific product that Pearson has purchased curriculum for through a variety of third party markets. A study by Cheng & Fox (2015) found that drawing on the insights of those students who have taken online test preparation increases our understanding of the operational test. Each district also uses the product differently with their students; while some districts allow students to choose to take the Pearson online course in a non-school environment, other districts have the use of this product built into existing coursework where all students are expected to participate in the course. Future research is needed to determine the effect that GradPoint has on the way schools have implemented the use of GradPoint. Researchers in the field will want to look into the scientific data of the curriculum they are using for their students along with the methods in which the data is being shared with the students. Researchers are looking for ways to help students improve their ACT scores and the curriculum, methods, and attitudes of the subjects on ACT coaching need to be taken into consideration.

Research Question 2

What impact does the Pearson GradPoint ACT Prep class have on ACT scores with respect to a student's race, gender, and economic status within the regional education consortium in Northwest Ohio? A t-test was run on each of the independent variables, while the dependent variable was the ACT score of the students. A t-test was run for each of the three years in this study. The results of this t-test on Caucasians found that in 2016 and 2017, the results failed to reject the null hypothesis that Caucasians who took the ACT Prep course in GradPoint were not a

significant factor in Caucasian students' ACT scores. In 2018, the t-test rejected the null hypothesis and that a significance could not be ruled out. A t-test was then run on non-Caucasian students and the results of the test in each of the three years of this study found that it failed to reject the null hypothesis and that non-Caucasian GradPoint course participation was not a significant factor in improving ACT scores. The researcher believes that this could be due to the small sample population in this study and that all non-caucasian students in this study were combined. Future research is needed in determining the effect race has on GradPoint and student ACT scores in a larger pool of subjects.

A t-test of male students who took the GradPoint class in 2016 and 2017 failed to reject the null hypothesis that male students' participation in the GradPoint class was not a significant factor in improving ACT scores for male students. In 2018, the t-test rejected the null hypothesis that the GradPoint class is a statistically significant factor in improving ACT scores. A t-test was then run for female students who took the GradPoint class in 2016 and 2017, and this test failed to reject the null hypothesis and determined that enrollment in the GradPoint class was not a significant factor in improving female ACT scores. In 2018, however, data obtained through this research failed to reject the null hypothesis and determined that female GradPoint class participation was statistically significant.

A t-test was conducted on students who were identified as economically disadvantaged by their home district and took the GradPoint class. Research findings from the t-test failed to reject the null hypothesis and showed that the online GradPoint course had no statistically significant effect on ACT scores for those students who were economically disadvantaged. This finding was consistent within this student subgroup for each of the three years included in this

study and research. Students who were non-economically disadvantaged and took the GradPoint class failed to reject the null hypothesis for this research question.

The results of this research question were very similar to the results from Research Question One. The hypothesis for this research question expected that the GradPoint class would lead to an increase in ACT scores, especially with disadvantaged youth who are also represented through many of the independent variables in this study. Previous research has shown that many students in these subgroups lack the experiences that often are cultural in nature which may threaten their success on the ACT. One such quantitative study conducted in Texas in regard to ethnicity showed that the average ACT scores were always highest for Asian students, followed by white students, then Hispanic students, and then black students (Harvey et al., 2013). These research findings are further supported by findings from Curry (2011) who found a significant relationship between gender, race/ethnicity, and ACT scores, although Curry's research included low numbers of participants in some of these subgroups as compared to others in the same study. The results of these subgroups were not as definitive as those in Research Question One, but did provide some benefit, while not significant, for students who took the GradPoint class. The regression model did show that the independent variables evaluated in Research Question Two are predictors on how students perform on the ACT. A study conducted by Wang (2013), found that students had higher levels of motivation due to student efficacy, and with many districts included in this study allowing students to choose whether they would take the course or not, the researcher was ultimately left to question the cultural and systematic opportunities for many of these students. Active participation in the online GradPoint course might not be encouraged or a student's ability to participate may be repressed culturally or environmentally.

Research Questions 3

What impact does the Pearson GradPoint ACT Prep course have on students with disabilities? A t-test was conducted on students who were on an IEP and who took the GradPoint class. The results of this study found that the t-test failed to reject the null hypothesis that students on an IEP who took the GradPoint class had no significant factor in IEP students' ACT scores for each of the three years of this study.

In evaluating the data over the three-year period from 2016-2018, a Stepwise Linear Regression was conducted on all of the independent variables to predict which independent variables in this study held the strongest predictor of a student's ACT score improvement. The strongest predictor of a student's ACT score was the variable of economic status. These findings are compatible with findings from a study by Kanuka (2014), which also found that a student's race and economic status did significantly predict ACT scores. This Stepwise model also found that the GradPoint class had a negative effect on student ACT scores for those economically disadvantaged students who took the state-mandated ACT test in spring of their junior year.

Students on Individualized Education Plans (IEP) who took the GradPoint class did have a significant correlation with ACT scores, as did students who were economically disadvantaged. In reviewing the data, this subgroup of students on IEPs was very small when compared to the other subgroups included within this study. Graves' (2011) study found that asynchronous learning enhances learning for students with disabilities. Findings by Graves (2011) do not correlate to the data and research included in this study, however, advances in technology and access to online resources with more recent timelines for this study may have impacted those varied results. Research by Vasquez and Seriann (2012) demonstrated how online learning instruction meets the needs of rural students with disabilities by providing opportunities to

students with different life experiences and access to the outside world. What is unknown is what modifications were given on the practice test along with the ACT. An area of note was that students on an IEP and enrolled in the GradPoint class would score over 2.5 points below all students on an IEP who were not enrolled in the prep course. This correlation was predictive of students on IEPs and lower ACT scores and was only slightly behind economically disadvantaged students and slightly ahead of students in the GradPoint class.

Research Questions 4

What impact does the Pearson GradPoint course have on helping students to be remediation-free for college? The Ohio Board of Regents have set cut scores of a 22 on the ACT to determine if a student is remediation-free for college coursework. This same standard has been designated as a pathway for graduation in Ohio. In 2016, the mean ACT score for those students who took the GradPoint class was a 20.41 composite score which falls below the threshold of a 22. In 2017, the mean ACT score of students who took the GradPoint class online was a 20.74 and also fell below the recommended remediation-free score. In 2016, the mean GradPoint score was 15.71, while the mean ACT score of students who did not take the GradPoint class was 19.79 and was still well below the threshold for being remediation-free. This study has found that students who took the GradPoint class did not earn scores allowing them to meet remediation-free standards. In addition, a study conducted by Barnes (2010) showed that approximately one-third of graduating students were underprepared for rigors of college level courses. Moss (2012), showed the benefits of ACT coaching in a face-to-face model when compared with an online or virtual format for GradPoint. The research and study conducted and evaluated herein have found the opposite; students who took the online GradPoint class had a negative effect on their ACT score. GradPoint is an asynchronous platform that does

not take into account the teacher. The teacher plays a vital role in online instruction. Too often teachers associate asynchronous instruction for hands off time. A study done by Borup & Stephens (2017) found that students valued teachers' efforts to nurture caring relationships, facilitate sustained dialogue, design and organize student learning activities and provide personalized instruction. Students however found that teachers varied in their abilities to effectively perform these activities and provided recommendations to improve how courses were designed and how teachers interacted with students. Another study done by Farrell & Brunton (2020) found that that successful online student engagement is influenced by a number of psychosocial factors such as peer community, and engaging online teacher and confidence and by structural facts like lifeload and course design.

Conclusion

Each research question in this study found a common theme in the results. Each one of these tests overwhelmingly could not disprove the null hypothesis that students who took the GradPoint class did not score any better on the ACT then those students who did not enroll in the GradPoint class, regardless of the subgroup in which they were categorized. The correlation in this study is predictive that students who take the GradPoint class have a lower ACT score, and the same can be said of each of the subgroups in this study. The year and gender of the students was determined to have a low correlation on predictive ACT scores. Ethnicity, economically disadvantaged status, IEP, and GradPoint class participation had a significant correlation with ACT scores. The largest predictor of ACT score resided in the subgroup of students who were economically disadvantaged, with the smallest predictor residing in the ethnicity subgroup. Very surprising in this study was that students who took the GradPoint class is that the evidence does not support that GradPoint supports increased ACT scores. The conclusions to this study are that

Pearson GradPoint does not help students to improve their ACT scores within the consortium of schools in Northwest Ohio, and enrollment in this online GradPoint course does not help students to earn remediation-free scores that fulfill a pathway for graduation in the state of Ohio.

Recommendations

Recommendation One

Schools should explore ways for students to perform more successfully in online coursework. A study conducted by Borup (2014) showed that teacher engagement, learning effects, and student perceptions are all factors that determine success in an online format. Some students are not natural test takers and putting them in an online environment without the proper training and focus is setting students up for failure. Student efficacy was studied by Wang (2013) who found that students must self-regulate by establishing set times to be able to concentrate on their coursework. Wang also found that instructors should design courses in a way that can promote a students' self-regulated learning behaviors in an online learning setting and that students in online and traditional classes set defined and regular times to work and concentrate on their coursework. Students need to have the skills to be successful in an online environment and this can often be very challenging for students to navigate without the necessary skills to be successful. Schools should explore ways for students to have access to technology at school and at home with a viable and reliable internet option. A study conducted by Vasquez and Seriann (2012) also links the success of students in an online setting to the availability and access to resources at school and in the home. Student accessibility and experience to online courses at school and at home have been a barrier for schools and students to develop the skills that are necessary to be successful online learners as this study has shown. Teacher training in online teaching is important for online students to be successful. A study by

Sanga (2018) found that online instructors needed more specialized training in online course development and management. The study also clearly found that online teaching faculty members had a shortfall of skills in more specialized areas such as course design/management, digital content planning, communication management, and using various learning management add-ons. When students are put into an online course without previous experience, they will often struggle finding success. When blended learning is used in used, students will be better prepared. In a study by Whiteside & Dikkers (2016) found that Teachers also suggest that students learn as much or more in the blended classes as compared with student in the traditional face-to-face classes.

Recommendation Two

Schools need to be better prepared to teach students. Often, students in schools know more about technology and how programs run than the instructors who are teaching them. Teachers need to have professional development on what it takes to make students successful in online learning. Schools should not mistake compliance for engagement with student work online, and instructors should provide timely and constructive feedback for student success. A study conducted by Farrell & Brunton (2020) found that successful online student engagement is influenced by a number of psychosocial factors such as peer community, and engaging online teacher and confidence and by structural facts like lifeload and course design. In a study conducted by Ou (2019), research found that the use of video lessons kept students engaged and enhanced their understanding of material. This methodology is further supported by a study conducted by Adelson and Dickenson (2016) that showed that student achievement scores derived from teachers' interactions with students. A study done by (Borup et al., 2014) found that teacher engagement is essential for student learning. Schools should develop a program with

expectations and guidelines for students and staff to follow. Educators cannot teach for the world that they were raised in, but instead must teach for the world in which these students will enter. This comes from reciprocating learning from student to teacher and teacher to student as technology advances. The transition from a brick and mortar teacher to an online teacher is often very different. A study by Kumar, Martin, Budhrani & Ritzhaupt (2019) on award-winning online teachers found that successful online teachers are experienced and comfortable in the online environment and use a wide range of strategies, be willing to learn, use data and analytics, and engaging in continuous improvement. Pearson GradPoint is curriculum, the impact of learning on students is impacted by the role of a teacher in an online setting.

Recommendation Three

Schools need to use caution in determining what online courses to use as curriculum. A study conducted by Borup (2014) showed that curriculum isn't the sole factor in effectiveness, and that the role of the teacher implementing the curriculum in a safe and nurturing environment is essential. Much of the online curriculum that major online curriculum companies market is purchased through third party vendors and then rebranded as their own with the purchase of their own student information system to market to districts. Schools must find a way to review the effectiveness of the curriculum they are using. A study by Barbour (2019) found that schools must do a periodic audit of quality assurance for online curriculum models. The bells and whistles that districts and teachers like for accessibility don't always mean that the curriculum is organized and shared in a way best suited for students. While researchers in the field are assessing online instruction, they need to be careful to determine the merit of the curriculum and separate that from other variables that affect online learning. Students who drop out of online classes, according to Varre (2014), often make this decision due to a lack of teacher efficacy.

Curriculum decisions must be evaluated for effectiveness. A study conducted by Adelstein & Barbour (2017) found that teachers are an important factor in curriculum implementation and should not be forgotten. When using curriculum, schools need to assess best practice and design. In a study done by Armstrong & Gale (2018) the researchers found that that design needs to include: executive sponsorship, support from the organization, content that is understandable and motivates the learner, culture fosters learning, relevant to the learner and organization, evaluates and assess, structure of the program is engaging, interactive and blended, and simulates the work environment and work tasks.

Recommendation Four

Schools should explore multiple ways for students to earn remediation-free scores for college and for the improvement of their ACT score overall. Schools could look at preparing students for the ACT throughout their high school coursework, and consider multiple and variable opportunities available to students instead of having just a single source for preparing for the ACT. In a study by Cheng and Fox (2015), the research explored the students' experiences to understand insights on learning styles to best prepare them for high stakes testing. Burmeister (2015) also studied the way schools look for ways to improve ACT scores. Students learn in different ways and as educators we must meet the needs of all learners. A study conducted by D'Agostino (2014) showed that test preparation was not beneficial for students, so it is clear that the whole student must be considered when developing curriculum and programming that will prove effective for each type of student subgroup. A study by (Jaber et al., 2018) found that by responding to the needs of learners has shown the greatest impact on student engagement through students determining their learning outcomes and mode of delivery. The interests and learning modalities of the student should be taken into context when looking for a

way to best educate students. A study by Park &Yun (2017) showed that students use different motivational regulation strategies and cognitive learning strategies depending on their academic levels. Schools should not look for the magic pill that will automatically improve ACT scores, but they should invest in the process that prepares students for success. Student voices are important in their education and the ownership of that voice in their education will drive success. In a study done by Borup & Stephens (2017) found that teachers varied in their abilities to effectively perform these activities and provided recommendations to improve how courses were designed and how teachers interacted with students.

Recommendation Five

School districts in Ohio should not count on students earning remediation-free ACT scores as the sole way to fulfill a graduation pathway. Ohio House Bill 487 implemented through the Ohio Department of Education (n.d) has set a variety of ways for students to meet the requirement for graduation. Schools should tailor their curriculum so that the student has the most opportunity to pursue a pathway for graduation that is best for them. Not all students are college bound, but they are all eventually workforce bound. Ohio's pathways offer multiple ways for students to graduate other than being remediation-free on the ACT. The competitive nature of schools in Ohio has allowed parents a choice in which district best suits their child's learning style, and with this choice comes a financial impact on the districts according to School Choice Ohio(n.d.). Not all students are successful in standardized tests and should carefully evaluate the different pathways available to them.

Limitations

While this research study takes into account many factors that contribute to improving a student's ACT score, there are limitations and weaknesses to this study that have been identified.

One of the major weaknesses of this study is student empathy to improving ACT scores. Students often do not see the importance and need to improve their ACT score and the need for taking the ACT class is not viewed as important. The experiences and counseling that students have at home and school on the importance of the ACT are varied amongst the student and the school. Student experience in taking an online class is another limitation. Students who have previously taken an online course have experience in time management and general experience in navigating in an online classroom with teacher interaction that varies between school districts. Each school incorporates their online ACT scores in a variety of manners. This study utilizes data from a variety of schools, and the experience and manner in which the online class was offered will not be the same for all schools. This study will focus on the district determined ACT date selected for all juniors within the school district. This snapshot of the students' junior year ACT score and their experience of taking the ACT online class prior to the test allow for a limited time for my data source. The focus of this snapshot of a single ACT score in relation to all juniors have determined the generality of limits for this study. The group sizes of the independent variables included in this study are imbalaned with the number of students who took the GradPoint class is so small compared to the students who did not take the class. The class engagement in a virtual environment is essential for virtual instruction. This teacher engagement is different in each of the schools and has evolved through experiences. This essential component is one factor in this study that cannot be controlled or managed.

Future Research Opportunities

As technology and online curriculum evolves and improves, so do students' experiences as online learners. One area of future research would be to look at a culmination of other online curriculum models that students are using to look at the impact that curriculum has on improving

standardized test scores. Another area of future research would be to examine the attitudes and experiences that students have with online curriculum and specifically for standardized test preparation compared to traditional brick and mortar schools. A third future research opportunity is to assess the perceptions of schools on their ability to equip students and staff to improve the online learning experience. A final area for future research studies would be to include a diverse sample population and a diverse online learning platform. While the results of this study did not show that an online curriculum product had a significant impact on improving ACT scores, this study did show the need for future research in the area of remediation-free ACT scores and the opportunities available for improving high school test preparation and programming.

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Appendix A

University of Findlay

Institutional Review Board

Date: **January 31, 2020**

To: Dr. John Gillham

CC: Erik Belcher

RE: Effects of Pearson's Digital Learning Solution on the 11th Grade Students' ACT Growth in a Regional Education Consortium in Northwest Ohio

Project Status: Exempt from review

The University of Findlay Institutional Review Board (IRB) has completed its review of your project utilizing human subjects and has granted authorization. This study has been approved for **Exempt Status**. The project has been assigned the number **1408**.

Projects deemed exempt from IRB review are also exempt from Continuing Annual Review. Therefore, you will not need to file a progress report to continue the study over a twelve month time period.

Please note that if any changes are made to the present study, you must notify the IRB immediately. Understand that any proposed changes may not be implemented before IRB approval, in which case you must complete an **Amendment/Modification Report**.

Following the completion of the use of human subjects, the primary investigator must complete a **Certificate of Compliance form** indicating when and how many subjects were recruited for the study.

Please refer to the IRB policy and procedures manual for additional information. Please include the project number on any other documentation or correspondence regarding the study.

Thank you very much for your cooperation. If you have any questions, please feel free to contact IRB at (419) 434-4640 or email irb@findlay.edu.

Sincerely,

Jaymelee Kim, Ph.D.
Vice Chair, Institutional Review Board

Cc: IRB Office

Appendix B

Erik Belcher <erik.belcher@napoleonareaschools.org> Feb 3, 2020, 9:25 AM

to ross

Dear Colleagues,
My name is Erik Belcher and I am the Superintendent of the Napoleon Area City Schools. I along with many of the Superintendents who started NOVA had a higher purpose to work collaboratively with districts to better serve our student populations. One of the benefits has been the GradPoint Class offered within NOVA. As a district leader I was looking for ways to help our students to become College and Career Ready and to increase our Junior Students ACT scores to help with college admission being remediation free as our end goal. While utilizing NOVA GradPoint Class to help with this I began my doctorate and I wondered what kind of impact this class in a digital format really had on improving student's ACT scores. With that said I am seeking your help to collect data as part of my dissertation. I have attached an Excel sheet where I am collecting data from your Student Information System as it relates to the Junior year mandated test in the years from 2019,2018, 2017, and 2016. If you could be so kind as to use the attached Excel sheet for exporting the needed data. I am looking for data from all Juniors during each of those four years even if you have utilized the GradPoint Class or not. I would especially need those districts data who did utilize the course. If you could please get me that data by February 7th it would be greatly appreciated. The data collected will help us to better help our students. Thank you again for helping with this request. Please return the completed excel sheet to

erik.belcher@napoleonareaschools.org

--
Erik Belcher
Superintendent
Napoleon Area City Schools
Office: 419-599-7015
Fax: 419-599-7035
Twitter: @ebelcher24

#AllInNapoleon

Appendix C

	A	B	C	D	E	F	G	H	I	J	K
1	**School District:**										
2	Grade Level	DOB	Gender	Ethnicity	Economically Disadvantaged	IEP	ACT LA Prep	ACT Math Prep	ACT Science Prep	Total ACT Prep	ACT Score
3											
4											
5											
6											
7											

2019 2018 2017 2016 +