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KINDERGARTEN THROUGH TWELFTH-GRADE STUDENT PERCEPTIONS OF ONLINE
COURSES AND THE QUALITIES THAT LEAD TO COURSE COMPLETION

by

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A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
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ABSTRACT

The purpose of this study was two-fold, to understand student perception of the supplemental online courses and improve the online learning program at ABC Online Learning School. The study focused on students in Grades 6 -12 who belonged to the ABC School District and enrolled ABC Online Learning School high school credit courses to supplement their education. Student participants were asked to complete the Student Survey of Online Course Design. The data retrieved from the survey was analyzed using the Spearman correlation to establish the strength of the relationship between student perception of quality online course design and the importance of specific components of the online course. The results indicated that as student perception of quality increased, their perception of the importance of the component increased as well. Additionally, a logistic regression formula was used to test the ability to predict successful online course completions based on the developer of the online course (instructor-developed or vendor-developed) and the type of credit the student would earn based on completion (original credit or credit retrieval/recovery). The results of the analysis of the logistic regression showed that developer of the online course and type of credit earned did not have a significant influence on successful course completions. The study is significant because, in Florida, K-12 online courses are funded based on successful course completion and students are required to successfully complete an online course to earn a high school diploma.

Keywords: K-12 online learning, quality course design, online course completion

Dedicated to:

God

Bryan, Brody, Clayton and Delaney,

John and Linda Saunders - my parents,

(I miss you Daddy!),

My family,

My closest friends,

My work family,

and

Dr. Glenda Gunter!

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Show me your ways, LORD, teach me your paths. Psalm 25.4

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LIST OF ABBREVIATIONS/ACRONYMS

ABC	ABC Online Learning School
ASD	ABC School District
F2F	Face-to-Face
B&M	Brick and Mortar
iNACOL	International Association of K-12 Online Learning
K-12	Kindergarten through twelfth grade
PLC	Professional Learning Communities
LMS	Learning Management System
SREB	Southern Regional Educational Board

CHAPTER 1 INTRODUCTION

Background

Watson and Murin, (2014) stated, “The University of Nebraska High School began delivering paper-based correspondence courses in 1929, launched its first ‘Tele Learning courses’ where students submitted work by email in 1985, and offered its first full diploma sequence online in 2001” (p. 1). Since 2001, online learning in the Kindergarten through twelfth grade (K-12) environment has seen exponential growth. In 2012-13, student enrollment in full-time online education rose to an estimated 310,000 according to Ferdig and Kennedy (2014). For the 2014-2015 school year, it was estimated that 2.7 million K-12 students took 4.5 million supplemental online courses (Herold, 2017). According to the Florida Department of Education (2017), Florida continued to rank first in the nation in online education with 428,000 students taking 522,000 online courses; 39,000 students enrolled in full-time online education, and the Florida Virtual School (FLVS) remained the largest virtual school in the United States for school year 2016-17.

During the 2010-decade, online course design was often not a primary consideration and was often copied directly from the face-to-face model of education (Barbour & Adelstein, 2013). However, a key building block to overall program quality is the quality of the individual courses (Watson & Gemin, 2009). Aragon and Johnson’s (2008) research on completion and non-completion of community college online courses indicated that course design and communication accounted for 28% of respondents’ reasons for dropping out of the online course. More specifically, respondents cited that they could not get a response from the instructor, the

materials were not available, and the course was confusing. This research suggests that online course developers have a responsibility to plan and design quality materials and courses.

Research conducted by Clark in 2001 indicated that 8 in 10 online schools developed or co-developed some of their own online courses, and only about 12% relied entirely on external providers for their courses and/or course content. There needs to be more research to determine if (a) the teacher (school) developed courses are of high quality, (b) the teacher developed courses are developed using guidelines that encourage student engagement and learning, and (c) if these courses undergo consistent review and revision procedures (International Association of K-12 Online Learning, 2018). Also, it would be important to know how student perceptions of the courses meeting the academic expectations are accounted for in course revisions and to determine if the type of course content and the delivery has an impact on student successful completion (Barbour, 2013).

Statement of Purpose

The purpose of this study was two-fold, to understand student perception of the supplemental online courses and improve the online learning program at ABC Online Learning School. The initial purpose was to understand student perceptions of the supplemental online courses, i.e. part-time virtual courses, in which the students were enrolled. The secondary purpose was to use the findings to improve the online learning program. These students are public school students taking both face-to-face traditional courses and supplemental online courses. For the purposes of this study, the research focused on students who belonged to the ABC School District (ASD) and use ABC Online Learning School courses to supplement their education. Student participants were given a revised quality online course design rubric, the

Student Survey of Online Course Design (Appendix C), for evaluating the quality of the online course(s). The survey was included in each course prior to the end of the semester. The results of the student survey allowed the researcher to ascertain the factors that contribute to course completion and achievement.

Due to the setting of this research, within the ABC Online Learning School Department of ASD, the researcher took the position of an insider. According to Herr & Anderson (2015), the insider positionality is one in which researchers conduct research alone and in the settings in which they practice. This study was not a self-study but rather an internal investigation that was managed by the researcher. The researcher's position as administrator of ABC Online School played a key role in this study because the secondary purpose of the study was to use the findings to improve the online learning program.

Significance of the Study

ABC School District (ASD) is no exception to the exponential growth in online learning and the lack of evaluative studies on the effectiveness of the online programs and/or quality of online courses being offered (Holland, 2016). In ASD, the success of an online program and/or course is determined by student outcomes, successful course completions and standardized assessment scores, as compared to the student outcomes, credit earned and standardized assessment scores, in traditional face-to-face courses. A successful course completion is defined as a course that is completed with a grade of 59.5% or higher and an unsuccessful completion is considered as earning a final grade of 59.4% or lower. At the time of this current research, there have been no evaluative studies based on course content that explain why students do or do not successfully complete the online courses. Stalker (2017) reported the grade distribution by year

for online courses offer between 2012 and 2016 for ABC Online Learning School as displayed in Figure 1. The table shows the percentages of As, Bs, Cs, Ds, and Failing (F). The pass rate in 2012 was approximately 90% compared to the pass rate of 79% in 2016.

The programs that have been responsible for the delivery of courses have not been required to determine what factors will likely produce a successful completion. Researchers have indicated that given instruction of equal quality, groups of students learning online generally achieve at levels equal to their peers in classrooms (Kearsley, 2000). ASD's online program has seen a growth pattern, but with growth comes growing pains. These growing pains include finding the answers to challenges such as technology barriers such as access to the Internet and devices, the cost of and interoperability of course content providers or suppliers, supporting the online learner in a virtual environment, best practices in online instruction, and increasing the number of successful course completions. This study focused on the factors that contribute to online course completion as reported by the students taking these courses with ABC Online Learning School. The rationale behind this study was two-fold. First, in Florida, school districts earn funding for online courses based on successful online course completions with success equaling a grade above 59.5%. Nationwide, the funding models for online education are varied (Cavanaugh & Blomeyer, 2007). Second, student completion of courses, along with other qualifiers, at the high school level leads to an earned high school diploma.

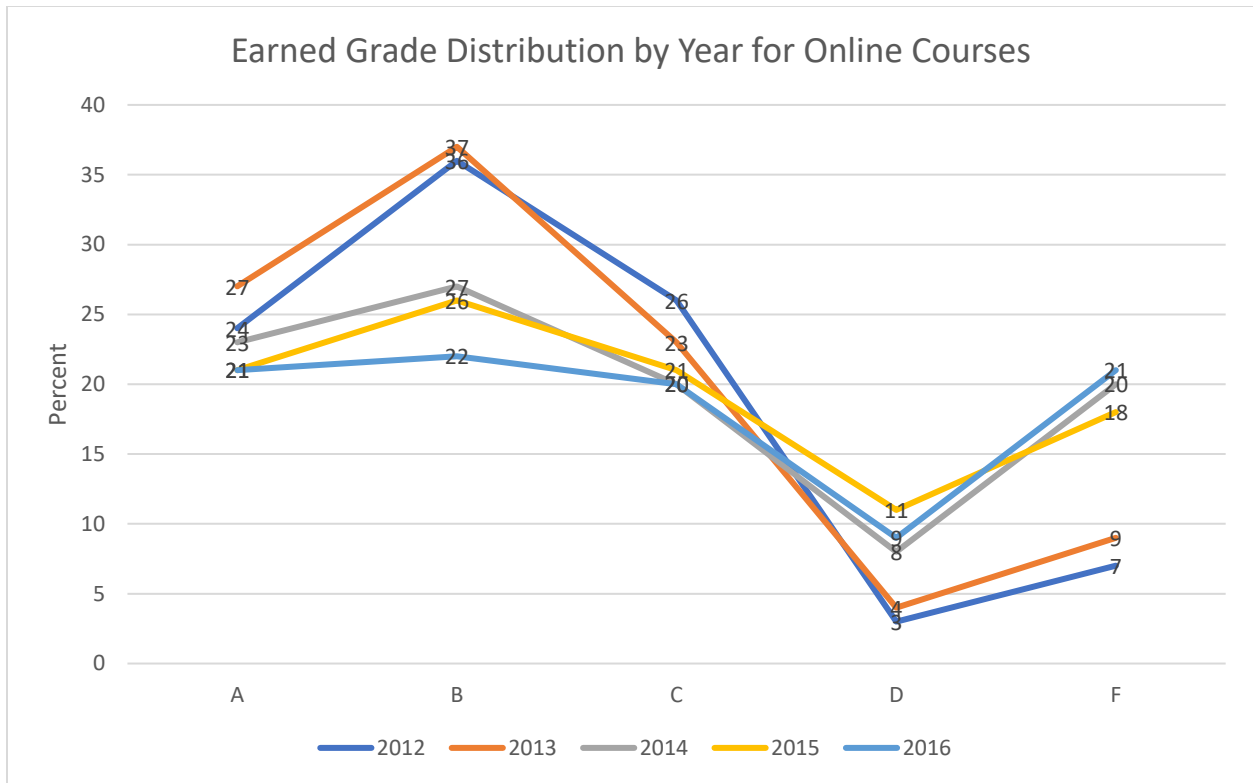


Figure 1. Grade distribution by year for online courses offered between 2012 and 2016

Source. Stalker, J. (2017, September 20). ABC Online Learning. Unpublished raw data.

Operational Definitions

The following definitions are used throughout the study. They were retrieved from *What Works in K-12 Online Learning* (Cavanaugh & Blomeyer, 2007).

Asynchronous Learning – online learning that takes place outside of the constraints of time and place.

Computer Assisted Instruction (CAI) – a program in which instructional material is presented using computers.

Content Management System (CMS) - a computer application that supports the creation and modification of digital content.

Course Enrollment – one student in a single semester-long course.

Credit Recovery – opportunities offered to secondary students who have failed a class to redo coursework or retake a course to earn academic credit or improve grade point average.

Distance Learning – learning that takes place in the absence of face-to-face interaction between the instructor and learners.

Full-Time Online (Virtual) Student – are students that take their entire course load online.

Hybrid or Blended Course – most of the learning takes place online but still includes some traditional face-to-face instruction.

Learning Management Systems (LMS) - software application for the administration, documentation, tracking, reporting and delivery of educational courses or training programs.

Online Content Suppliers – entities that deliver online courses, instruction, and technology tools and/or services to support online learning.

Open Educational Resources (OERs) - freely accessible, openly licensed text, media, and other digital assets that are useful for teaching, learning, and assessing as well as for research purposes.

Original Credit – course taken by a student for the first time and is credit bearing.

Part-time or Supplemental Online Courses – courses used to enhance a student's educational program or class schedule.

Synchronous Learning – online learning between a group of students that happens at the same time.

Unique Student – one individual student who may take any number of courses.

Vendors – companies or organizations that are in the business of developing and delivering a broad range of products and services to the education industry. This can include online content, instruction, technology infrastructure and other services and products for purchase.

Zone School – the school in which a student attends based on proximity to the school when using school and student’s permanent address.

Theoretic Framework

Introduction

This section, Theoretic Framework, uses three theories to assist in understanding the importance of applying learning theories to online learners and the online learning environment. The three theories are the Moore’s three types of interaction (Moore, 1989), Community of Inquiry (CoI) (Akyol, Garrison, and Archer, 2000), and the Adolescent Community of Engagement (ACE) (Borup, 2014). These three theories share the common theme of online learner engagement and how online instructors can maximize their impact on their students through presence, interaction, and engagement.

Three types of interaction. Moore’s (1989) three types of interaction focus on learner-content, learner-instructor, and learner-learner interactions. Learner-learner interaction is characterized by the types of the interactions between learners, which are dependent on learner age, grade level, and subject matter. However, learner-learner interactions are key to teaching students how to function appropriately in society (Moore, 1989). Learner-instructor interaction is characterized by the type of interactions the learner has with the instructor. Instructors are

charged to take content, created by them or created by someone else and facilitate student engagement and learning. According to Moore (1989), the most valuable interactions occur within the feedback that the instructors provide for learners. Learner-content interaction is the interaction of the learner with the subject matter to be learned. Moore (1989) stated, “There is no education without learner interaction with the content” (p. 3). The purpose of the learner-content interaction is to change the learner in some way, cognitively or in understanding of content which will be another focus of this research study.

The Community of Inquiry

The Community of Inquiry (CoI) framework was developed by Garrison, Anderson, and Archer (2000) for online learning. The CoI consists of cognitive presence, social presence, and teaching presence as applicable to online learning environments. According to Akyol, Garrison, & Ozden, (2008),

...the philosophical premise of the framework is a collaborative constructivist approach to teaching and learning. The framework implies that a worthwhile educational experience is embedded within a community of inquiry that is composed of teachers and students - the key participants in the educational process. (p. 1834)

Although the CoI was developed to address online learning in higher education, there are applications for K-12 online education and all areas of online learning (Akyol et al, 2008).

Cognitive presence is defined as the extent to which any participant in the CoI can construct meaning through sustained communication. Within the confines of cognitive presence lies critical thinking which not just a passive, individual process is. Kanuka and Garrison (2004) stressed that critical thinking blends together personal reflection and collaboration. The second

type of online presence is social presence. Social presence is the ability of the CoI participants to project their personal characteristics into the learning community. Teaching presence is the third type of online presence introduced by Garrison et al. (2000). Teaching presence is described as design, facilitation, and direction of the cognitive and social processes and is the binding element in the online learning environment. Garrison et al. (2000) created a graphic display of the elements of an educational experience which includes the three types of presence that are applicable to online learning environments. Selecting content, setting the climate, and supporting interaction are three factors that need to be considered when designing a quality online course. For the purposes of this research study, the focus will be on teaching presence which specifically takes into serves to combine the other elements of social and cognitive presence through design, facilitation, and direction of the online learning environment.

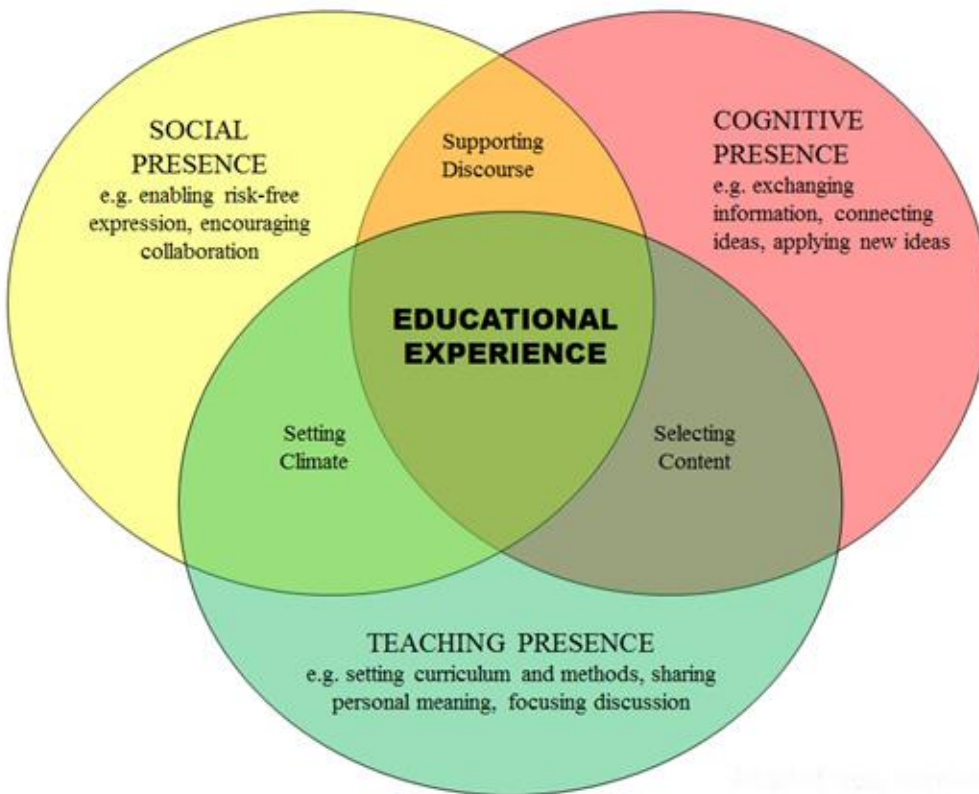


Figure 2. The elements of the educational experience

Source. Garrison, D., Anderson, T., & Archer, W. (2000). "Critical inquiry in a text-based environment: Computer conferencing in higher education model."

Adolescent Community of Engagement. Borup's theory of Adolescent Community of Engagement (ACE) was a result of the lack of a specific theoretical framework that addressed adolescent online learners and the online learning environment. The ACE includes four types of engagement: student, teacher, peer, and parent engagement. For the purposes of this study, the focus was on student engagement because student successful course completion is relative to the student's interest/engagement in the course. There are three ways that online teachers can impact

student engagement: facilitating interaction, organizing and designing course materials and timelines, and instructing students (Borup, 2014). According to Borup (2014), to meet the needs of their students, teachers should be able to design and edit all the courses that they use, even the course built by an outside vendor.

Statement of the Problem

The growth in the numbers of students learning online and the importance of online learning as a solution to educational challenges has increased the need to study more closely the factors that affect student learning in online schooling environments (Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2008). K-12 public schools and school districts have been using a wide variety of digital content and instructional software for many years. “We have seen many examples of innovative and effective use of these tools within instructional programs from the early grades through high school, from core subjects, to advanced learning and to credit recovery” (Gemin, Pape, Vashaw, & Watson, 2015, p. 24).

Many of the early research studies on online education focused on higher education. Of the research that was available for review on K-12 online programs, most were evaluations comparing state assessment scores of students taking online courses to those of students taking courses with a face-to-face instructor (Ferdig & Kennedy, 2016). According to Lowes (2014), many of the researchers compared online learning to face-to-face learning to promote the equivalent success rates of online learning for funding opportunities. Prior to 2008, there were few research studies that focused on the effectiveness of the online program offered by a school district or the quality of the online courses offered. Therefore, the problem of practice for this

dissertation was to explore the online course content that K-12 students perceived as important to successful online course completion.

The disparity between student state and school district assessment scores for brick and mortar (B&M) and online courses is a problem within the context of the organization because part-time online students belong to their zone schools, and their assessment scores and graduation rates are factored into the overall state rating of their schools. Over the past two years ABC School District has received an overall B rating based upon the state of Florida's accountability system. However, prior to those two years, the school district had received two consecutive C grades. The state assigned school grades for the 10 high schools ranging from A to C. After informal discussion with various high school principals after end-of-course (EOC) examination scores were released in 2016, the principals of schools with high part-time online student enrollments voiced that the scores earned by students taking courses in online settings were lower than the scores of students taking the course with a face-to-face teacher. They believed that because of this, their schools' grades, as assigned by the Florida Department of Education, were lower.

Another reason this is a problem within the context of the organization is that online courses in Florida have been funded based on successful course completion. Florida is one of a few states that has funded online courses based on successful completion as opposed to seat time funding, which is determined by a student's time in a course. If a student enrolls in an online course, passes with 59.5% but fails the end of course examination causing the final grade to average to below 59.4%, the district does not earn funding for that course. In another scenario, if an online course without an associated end of course examination is not successfully completed

(earned grade of less than 59.4%), the district would not be funded for that class either.

Principals have expressed the belief that their students should not take an online course if the course was attached to a state end-of-course examination. The school district has encouraged ABC Online Learning School to increase student successful completions and assessment scores to earn funding and earn higher school grades for the zone school and the overall school district grade. The impact of the type of online course content on student achievement as measured by successful completions could potentially have an impact on the entire school district through funding, standardized assessment scores, graduation rates, and school and district overall grade.

Lastly, the online instructors' ability to instruct students in their content area affects the organization if instructors are also expected to develop their own courses or use a course of inferior quality that was developed by another person or vendor. "Faculty are subject matter experts, but not always instructional design experts, and having a lack of instructional design expertise, especially specific to online learning, is a significant cause of failure in an online learning program" (Meyer & Barefield, 2010, p. 2).

Florida House Bill 7069, passed in 2017, allows for all students to have access to online courses by removing the eligibility requirements of the past. At the time of the present study, students could take an online course from a variety of places including other districts and FLVS. The opportunities for students are wide ranging. To compete with other districts and FLVS, ABC Online Learning School must offer the best opportunities for all students. This includes a wide variety of course offerings, quality online instruction and quality courses. According to Kilic-Cakmak, Karatas, and Ocak (2009),

Students' perception of online course quality failing to meet their expectations is certainly a factor influencing attrition. This is especially true in e-learning environments, where the larger the gap between students' expectations and experiences is, the less the student participation. (p. 353)

Kuong's research in 2009 showed that students' perceptions of a learning environment are positively related to their subsequent learning behavior and the quality of their learning outcomes.

Wong (2017) addressed consistency and standards, observing that they must be considered when designing an online course or user interface. This is because each task that the learner is expected to complete takes a toll on the student's ability to commit new learning to working memory. Cognitive load theory, introduced by Sweller in the 1980s, has been particularly useful when developing online courses. Sweller suggested that extraneous tasks, such as linking to another site, irrelevant animations and graphics, and non-essential decorations detract from the learner's ability to learn the essential content. The expectation that the instructor can navigate between the types of courses, be the content expert, provide support and feedback to students, and continually develop or revise these courses is unreasonable. The teacher is frustrated, and the students are not satisfied. Online learning development frequently suffers from a lack of resources, particularly infrastructure, policy and support mechanisms, and is conducted under pressure to quickly meet growing demand (Ebner-Holsombach, 2013).

Research Questions

The following research questions guided this study.

1. How do student perceptions of online course content, instructional design, student assessment and technology infrastructure relate to student perceptions of importance of specific instructional components of the online course?
2. How do students' perceptions of online course content, instructional design, student assessment, and technology infrastructure relate to online course completions?
3. What is the relationship between course completion and how the online course is developed: vendor-developed versus instructor-developed?
4. What is the relationship between course completion and the student taking an online course for original credit or credit retrieval/recovery?

Limitations

The following limitations were recognized and apply to this research study:

1. The validity of the quantitative and qualitative data is subjective to the participants' self-reporting in the surveys.
2. The participant population includes only ABC School District students in Grades 6-12 taking a high school credit course.
3. This study only focuses on courses used in ABC Online Learning School.

Delimitations

The following delimitations were utilized by the researcher to gain a better understanding of the impact of online course content and course delivery model on student satisfaction.

1. Students who completed the survey were selected based on enrollment in a high

- credit online course(s) with ABC Online Learning School.
2. Surveys were completed by students in one school district, ABC School District, in Florida.

Assumptions

The following assumptions were made regarding the study and the participants:

1. Participants answered all questions with honesty based on their experience in an online course with ABC Online Learning School.
2. Participants answered survey questions reflecting their true and honest opinions and thoughts.
3. Participants had access to the online survey questions.

Organization of the Study

This report of the present research study has been organized using five chapters. The first chapter serves to introduce the nature of the study that included the problem statement, theoretic framework, methodology of the study, and limitations. The second chapter includes the review of the literature surrounding online learning and online course design. Chapter 3 contains an outline of the methods and procedures that were used to conduct the research. The results are discussed in Chapter 4. Lastly, Chapter 5 provides a summary of the results, implications, and suggestions for future research on K-12 student perceptions of online learning and K-12 online course design.

CHAPTER 2 LITERATURE REVIEW

Introduction

According to the Florida Department of Education (2017), Florida continued to rank first in the nation in online education with 428,000 students taking 522,000 online courses; 39,000 students enrolled in full-time online education, and the Florida Virtual School (FLVS) remained the largest state virtual school in the United States for school year 2016-17. In ASD, the success of an online program and/or course is determined by number of successful course completions and online student standardized assessment scores as compared to the same completion and assessment scores of students in a traditional classroom. The programs that have been responsible for the delivery of courses have not been required to determine what factors will likely produce a successful completion. The purpose of this research is to ascertain student perceptions of their online courses and what factors of their online course they perceive as leading to successful completion which will lead to program improvement. This chapter begins with a brief history of K-12 online learning, continues to explain the characteristics of vendor-developed and instructor-developed online courses, and ends with an overview of previous student perception surveys.

Brief History of K-12 Online Learning

Distance learning, learning that takes place in the absence of face-to-face instruction between the learner and the teacher, is not a new concept. Prior to the World Wide Web, distance learning was implemented using the postal service, telephone, CD-ROMS, VHS video and video conferencing (Gemin et al., 2015). As the World Wide Web became the norm, options for virtual

education grew both inside and outside the brick and mortar classroom as students could access information anywhere and at any time.

The concept of computer-assisted instruction (CAI) was introduced in 1960. CAI was introduced with the advent of the PLATO project that was focused on higher education and corporate and military training at the University of Illinois. Over time, PLATO evolved to provide opportunities for students to recover lost credits (credit recovery). Although CAI began with a focus on credit-recovery and lab situations, distance learning has become the type of online learning that has become familiar in K-12 education (Gemin et al., 2015). Online courses are defined as those courses in which 80% of the course content is delivered online (Allen & Seaman, 2010). K-12 online courses are not only utilized for credit recovery. They provide students with opportunities to take courses not offered at their zone school, to participate in extracurricular activities outside of what is offered at the zone school but during the regular school day (e.g., competitive gymnastics), and to accelerate their learning.

The most common forms of online learning take three forms. They are as follows: (a) statewide virtual schools, (b) full-time online schools, and (c) local school district online and blended learning programs.

At the time of the present study, statewide virtual schools existed in 39 states (Watson & Gemin, 2009). They have been created by legislation or by a state-level agency, and/or administered by a state education agency, and/or funded by a state appropriation or grant for providing online learning opportunities across the state. In 2010, the state virtual schools had approximately 450,000 course enrollments. Despite their uneven funding and budget cuts, they

have remained the largest segment of the K-12 online learning market. The grade levels served are primarily high school (Gemin et al., 2015).

Full-time online schools combine students from multiple counties and districts into one online environment. As of the fall of 2010, there were 27 states that had at least one full-time online school (Gemin et al., 2015). Gemin et al. (2015) estimated that 200,000 students were attending full-time online schools. They also stated that commercial companies, such as Connections Academy and K-12 Inc., operate many online schools (Gemin et al., 2015).

Local school district online and blended learning programs are the fastest growing segment of K-12 online learning (Watson and Murin, 2014). Blended learning programs combine face-to-face instruction and online instruction into blended learning programs. Gemin et al. (2015), as well as other researchers, have suggested that about 50% of all districts are operating or planning online and blended learning programs. These programs are mostly supplemental, offering courses that would otherwise be unavailable to the students, such as Advanced Placement courses.

Since 2001, online learning in the K-12 environment has seen exponential growth. In 2012-2013, student enrollment in full-time online education rose to an estimated 310,000 according to Ferdig and Kennedy (2014). For the 2014-2015 school year, it was estimated that 2.7 million K-12 students took 4.5 million supplemental online courses or part-time virtual courses. According to the Florida Department of Education (2017), Florida continues to rank first in the nation in online education with 428,000 students taking 522,000 online courses. A total of 39,000 students enrolled in full-time online education, and the FLVS was the largest state virtual school in the country for school year 2016-17. The growth in the numbers of students

learning online and the importance of online learning as a solution to educational challenges has increased the need to study more closely the factors that affect student learning in online schooling environments (Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2008).

Florida has become one of front runners in the development and implementation of K-12 online learning solutions by legislating (Florida Statute 1003.498) that all K-12 public school students have full-time and part-time virtual options. In addition, Florida legislation requires that state funding follow the student to the supplier of the course. FLVS, which opened in 1997, is the largest state virtual school in the country (Gemin et al., 2015). In 2000, FLVS had 10,000 course completions. By 2013, this number grew to 410,962 (Watson & Murin, 2014). What began as a school district program grew into its own Florida school district and being a national and international force in online education. The growth of FLVS led to changes in legislation regarding state education funding, length of the school year for FLVS students, and online graduation requirements. Many Florida districts chose to align the online initiatives with FLVS by becoming franchises. A school district that chooses to become a FLVS franchise uses the resources of FLVS such as content, curriculum, and the FLVS online platform but uses its own school district employees (faculty and staff) to implement and administer the online program. In turn, the district pays FLVS for the use of these resources. ABC School District has never entered an educational relationship with FLVS. Table 1 outlines the number of online course enrollments for the 2016-17 school year.

Table 1

Florida Virtual School Enrollments (FLVS): 2016-2017

Virtual Program/School	Program Type	Grade Levels Served	Student Eligibility	2016-17 Enrollments
State Level				
Florida Virtual School (FLVS)	Part Time	K-1 and 6-12 2-5	All students Per s. 1002.455	396.130 course completions
Florida Virtual School FLVS – Full Time	Full Time	K-12	All Students	7565 unique students
District Level				
District Franchise of FLVS	Part Time Full Time	Same as FLVS	Same as FLVS	91,196 total course completions (PT + FT)
District Virtual Instruction Program	Part Time	K-1 2-12	All students Per s. 1002.455	5776 unique students
(VIP Provider or District Operated)	Full Time	K-5 6-12	All students Per s. 1002.455	2,805 unique students
District Virtual Course Offerings	Part Time	K-1 2-12	All students Per s. 1002.455	14,584 unique students
Virtual charter Schools	Full Time	K-5 6-12	All students Per s. 1002.455	1,188 unique students

Source: “Fact sheet.” (2017, November) Florida Department of Education. Office of Independent Education and Parental Choice.

With the increase in online delivery, quality concerns also increase. Innovative faculty may not be well versed in the best practices for using technology in online courses, and content

experts may not be knowledgeable in how to take their content knowledge and make it appropriately accessible to online students (Varonis, 2017). This has been a concern for ABC Online Learning School. In 2006, ABC Online Learning School had approximately 525 supplemental/part-time course enrollments and for fall 2016 that number grew to 1,413. ABC Online Learning School began as a program that used only content purchased from a vendor and four, full-time online teachers. It has grown to a staff of 23 teachers who offer a mixture of homegrown courses and purchased content.

Table 2 lists the attributes of the two types of online content that are offered by ABC Online Learning School. The first type is instructor created courses. These courses could use textbook dependent content which means that the learner needs log-in credentials to access the digital content purchased by the district through textbook adoption. Also, included in the instructor created courses could be instructor self-created content and content found online using Creative Commons, an area within a learning management system where instructors share resources, and Open Education Resources, free resources found online. The second type of online course utilizes content purchased from a vendor which allows the instructor to personalize the content to the student need or a full vendor-created course that cannot be customized or altered by the instructor.

Table 2

Types and Attributes of ABC Online Learning School Course Content

Course Type	Attributes
Instructor created	<ul style="list-style-type: none"> • Aligned with district curriculum maps, allowing students to go from brick and Mortar (B&M) to online course and, if each is on pace as scheduled by curriculum maps, not miss any content. • Online instructors can effectively work in professional learning communities (PLC) with B&M instructors using same content. • Time to develop a full course when new textbooks are adopted. • Digital integration of textbooks within learning management system (LMS). • Technical issues. • Student must be a registered member of the district to access digital textbooks. • Use of a variety of online resources. • Supported, updated, and maintained by the instructor and program staff
Professionally developed online courses	<ul style="list-style-type: none"> • Cost of purchased content. • Ability of purchased content to be integrated within LMS. • Flexibility of purchased content (able to be manipulated by the instructor). • All content is accounted for and aligned to standards as determined by the state. • Professionally created by instructional designers. • More course offerings. • Provider usually has instructors available if needed. • Supported, maintained, and updated by content provider.

Source: ABC Online Learning, 2018.

Public schools and districts have been using a wide variety of digital content and instructional software for many years. “We have seen many examples of innovative and effective use of these tools within instructional programs from the early grades through high school, from

core subjects, to advanced learning and to credit recovery” (Gemin et al., 2015, p. 25).

According to Barnard and Echols (2015), the decision regarding online curriculum is one of the most important and expensive decisions that needs to be made when starting a virtual school. An important part of the decision is to build or to buy digital curriculum. There are benefits and pitfalls to each option. According to Clark & Barbour (2015), the benefits to purchasing curriculum include allowing for a quicker start up, alignment to national standards, and the ability for the vendor to develop engaging and interactive content. They continued by adding that the pitfalls include lack of allowable customization or lack of flexibility within the content and costly subscription or licensing fees.

Developing online content has benefits and drawbacks. The benefits include direct alignment to the district standards, flexible customization, and long-term cost savings. The drawbacks include high upfront costs associated with the need for highly skilled personnel to build the content (International Association on K-12 Online Learning, 2018). Time involved to build could slowly start up, the ongoing process of course review and editing, and teacher training. Table 3 presents the pros and cons of building or buying content as described by the International Association on K-12 Online Learning (International Association on K-12 Online Learning, 2018).

Table 3

Pros and Cons of Building Versus Buying Online Courses (International Association of K-12 Online Learning, 2008)

Issue	Build	Buy
Initial cost	-Large upfront investment prior to enrolling students	+Multiple license models allow for low initial costs
Ongoing cost	+Ongoing costs limited to course maintenance/updating	-Depending on licensing model, ongoing costs can be nearly as much as initial costs
Content/design flexibility	+School has total flexibility over content, instructional design -Ongoing course maintenance/revisions required at local level -High cost of multimedia development may limit design options	-Ability to customize courses in content or design is inherently limited
Decision making	-Every component of the course needs to be thoughtfully designed	+Decisions about most details are already made. Decision-making process primarily limited to which course will be licensed using which licensing models
Timeline	-Roughly 12-18 months to develop a course	+A large number of courses readily available
Skill development	+Develops district skills in content writing, online instructional design, technology, etc.	-May develop online instruction skills. Does not generally develop writing or design skills
Risk	-Higher risk in that larger initial investment does not guarantee successful course production	+Lower risk due to lower initial costs, able to start with a few enrollments, and ability to switch course vendors if necessary
Curriculum uniqueness	+Any imaginable course can be developed	-Courses available are those designed for large, nationwide consumption. Options can be quite limited
Copyright ownership	+District/school owns course, can resell it and market it as a unique offering	-District/school does not own copyright and generally cannot redistribute or resell
Professional development	-Requires wide-ranging professional development on content, design, technology, and instruction, including W3 design standards	+Professional development is focused on instruction and the nuances of the course

Source. International Association on K-12 Online Learning (2018, January 25). “How to start an online learning program: A practical guide to key issues and policies.”

There has been a great deal of research on the effectiveness of K-12 online learning; however, research has been lacking on the relationship of student perceptions of the online learning courses directly associated with course completion and achievement scores. According to Barbour (2013), this could be due to online course design not being a primary consideration and the fact that course design and content have often been copied directly from the face-to-face model of education. The assumption has been that course content could be delivered the same way in both modalities, face-to-face and online. Although the benefits of online learning include convenience, flexibility, and unlimited access to content that would otherwise be inaccessible, the Sloan Consortium reported in 2013 that 25% of academic leaders believed that online learning has inferior learning outcomes as compared to face-to-face learning outcomes (Allen & Seaman, 2013).

Due to the growth in online learning and the concerns expressed by online instructors and institutions offering online learning, it is widely accepted that the quality of online courses needs further research. In a 2011 article by Picciano, Seaman, Shea, and Swan, the authors stated that the most significant barrier school district administrators faced in developing and offering online learning at their schools was their concern about course quality. In 2013, Morrison stated in her blog, "Online Learning Insights," that

Course design is about creating environments to help students learn. As new courses are developed or transformed from face-to-face to an online format, the focus should not be on the technology, the platform, the video lectures, the forums, the instructor, but on the *students* —what methods will facilitate *their* learning? How will they learn? (para. 6)

Online courses can be developed internally, purchased from an outside source, or may consist of a combination of both. Additionally, courses that are developed internally may consist of content developed by the instructor or designer, content found online via Open Educational Resources (OERs), digital content purchased as part of a software package (textbook package), or a combination of all. There are two schools of thought regarding the source of the online course content according to Ko and Rossen (2010). The authors stated that the standardization of the online course design equals consistent quality and scalability but trying to teach from a design created by someone else seems less personal and more challenging to make one's own.

According to the 2008 Survey of U.S. School District Administrators by Picciano and Seaman (2009), the major providers of online content and instruction have been postsecondary institutions, state virtual schools within the school district's home state, independent vendors, and education service agencies. However, in U.S. southern states the state virtual schools, (e.g., Florida Virtual School), have led in providing fully online courses (Picciano & Seaman, 2010). No matter where the content originates, the quality of online courses has consistently been an area of concern at all levels of education along with the cost to develop or purchase online content (Barbour & Adelstein, 2013).

With the rapid growth of online learning in the K-12 environment, educational content provider companies have begun to create online resources, online content and complete online courses to meet the growing need. Yet, up until recent years, few states regulated or vetted the content that was purchased by their school districts. In Florida, though companies like Odysseyware and Online Education Ventures failed to meet state academic standards and were rejected by the Florida Department of Education, districts were still able to purchase content and

resources from them (Kirsch & Smiley, 2017). More recently it was found that 32 states were taking some steps to regulate virtual learning providers but most of these efforts involved the state's school districts to verify their own online content and content purchased from vendors (Watson & Murin, 2014). Regulation of online courses and providers has been inconsistent from state to state and even school district to school district.

Vendor Developed Online Courses

When online learning began in the early 1990s, school districts had to develop their own digital content because there were few companies selling digital content (Huang, Kinshuk, & Price, 2016). With the growth of online learning in the first two decades of the 21st century, educational companies have been focused on either opening their own virtual schools (i.e., K12, Connections, Inc.) or providing online courses to school districts (i.e., Apex, Edgenuity). In 1997, the Florida legislature funded a state virtual school, Florida Virtual School (FLVS). FLVS has developed courses and partnered with educational companies (Connections) to provide supplemental and full-time online learning opportunities for students and schools around the globe.

In the 2016 edition of "Keeping Pace with K-12 Online Learning," the Evergreen Education Group described several types of online content providers: suppliers, intermediates, and vendors (Gemin & Pape, 2017). A supplier is typically a large company that provides content, sometimes very specific, to be used in an online environment. An example of a supplier would include Pearson and Houghton Mifflin Harcourt (HMH). A supplier usually does not provide instruction, simply online content and the tools associated with the content. An intermediate usually is a local entity, within the state, that uses vendor content or builds content

internally, creates online tools and resources, and provides support services to the schools that they enter into a contract. Florida Virtual School (FLVS) is considered an intermediate for the state of Florida, as it is the state virtual school and provides internally created online content, purchases content from a supplier, and provides resources and support for all other districts if needed. Vendors are companies that develop products and resources for the education industry. Vendors can also provide instruction for the online courses that they create. An example of a vendor would be Apex Learning. Intermediates. Vendors sometimes work together to provide an even broader range of products and services for schools. The line between supplier, intermediate, and vendor is blurred as these entities try to reap the benefits of online learning growth by expanding their reach to all areas of online education.

For many companies providing the online course, the development process includes a team of people who take approximately one year to develop a two-semester course. The team of people generally includes a (a) content specialist, (b) instructional designer, (c) web developer, (d) visual designer, and (e) teacher (Clark & Barbour, 2015). Clark and Barbour (2015) went on to explain the roles of each: (a) the content specialist is responsible for providing all materials and resources related to the content such as scope and sequence, learning objectives, and resources, (b) the instructional designer uses educational theory and best practices to organize the content so that it meets standards, (c) the visual designer works with the instructional designer to develop the visual experience of the content and to ensure consistency of themes and branding throughout the course, (d) the web developer translates the visual elements into appropriate and engaging online pages, and (e) Lastly, the teacher is responsible for quality control which focuses on course delivery and the outcome of the course design process. This entire process can cost

upwards of \$1 million depending upon the course. In 2014, Goen reported that \$21 billion of the funds spent in K-12 schools would be for technology and that 63% of school districts reported contracting with vendors to provide online courses.

Instructor Developed Online Courses

With the growing demand for K-12 online learning opportunities, and given tight budgets, school districts have begun to develop their own online courses (Varonis, 2014). The development of these courses usually is the responsibility of the teacher of the course; the designer and the teacher are typically the same person. This means that a single individual is responsible for organizing the units, preparing the lessons and assessments, and teaching the course (Clark & Barbour, 2015). However, few classroom teachers are trained in instructional design and best practices in online learning (Hooie, 2011). As K-12 schools look for different avenues for offering the most appropriate learning experiences, teachers often hold dual roles as instructor and course developer (Hooie, 2012). The term, designer-by-assignment, was coined by Merrill (2007) to describe professionals who lack formal training in instructional design. The classroom teacher/designer-by-assignment, though rarely receiving instructional design training, is asked to both create and teach online courses (Oliver, Kellogg, Townsend, & Brady, 2010). Merrill (2007) further postulated that designers-by-assignment develop 95% of all online offerings.

The rationale for teacher created courses includes the need for customized curriculum, increased stakeholder engagement, and development of empathy for the student online experience specific to each course (Oliver et al., 2010). Oliver et al (2010) explained that one model of teacher-developed online courses is a team approach used in North Carolina Virtual

Public Schools. Using this team approach, teachers already employed by the virtual school develop courses with the assistance of research, development, and innovation specialists. Many school districts do not have these “specialists” available to build courses, and teachers are left to design their courses on their own (Oliver et al, 2010). Another model that has been utilized by school districts building their own courses is the use of a standard course design template for the teacher as course builder to follow to develop consistent courses for the entire program.

Spodark (2001) explained that online instructors are expected to shift from content delivery to learning facilitator. Spodark continued by outlining specific roles of the teacher using analogies to choreographers, doctors, and coaches. The teacher, as choreographer, designs the movement of the learner through each phase of the learning process. The teacher, as doctor, intervenes to aid and alternative learning opportunities to students as needed. And as coach, the teacher guides the students to success using best practices. Moore (2001) extended these roles to apply to the online instructor in three phases of delivery. First, the teacher prepares the goals, objectives, and content. Second, the teacher presents the content to the learner using the appropriate technology. Lastly, the teacher is expected to interact with the student. In addition, Moore (2001) stated that along with the three phases of delivery, the teacher is expected to monitor and evaluate student progress and troubleshoot technological or other problems that may arise. These descriptions of the expectations of the online instructor blend the roles of instructional designer and instructor.

Studies of Student Perceptions of Online Learning Courses

Student perception studies have been limited in K-12 online education. According to Cavanaugh et al. (2009), most literature related to K-12 online learning was based on the

individual experiences of teachers, course designers and administrators. Additionally, of the research that has included student voices, the sample of students has generally been high achieving and highly motivated (Barbour, 2009). With the increasing number of students pursuing online educational opportunities, it is important to understand their perspectives.

In 2012, Barbour, McLaren, and Zhang conducted a study of students' perceptions of online learning components that were helpful or challenging to the learning process. The study was conducted in Canada and used a semi-structured interview methodology. Students reported that teacher preparedness and knowledge of content, lack of constant supervision, and self-directed learning were positive attributes in online learning. These students also reported technology issues (though there were few), lack of knowing who their classmates were or sense of community, and misuse of asynchronous learning time as challenges to online learning. For the purposes of the present study, it is interesting to note that Barbour et al. (2012), reported in their study that students did not interact with the online content that was assigned during asynchronous time because the content was not engaging and resembled seat work from the face-to-face classroom.

Summary

This study was intended to determine if a relationship exists between the factors that students perceive as important in an online course and course completions and achievement. According to Borthwick, Hansen, and Spinella (2015), "The contour of online learning involves varied approaches and models across the United States, including fully online schools, charter schools, and single district programs" (para. 8). States and districts can opt to create their own courses, use professionally developed content or courses, or can use a combination of both.

Gemin et al. (2015) summarized the many varied reasons for the popularity of online courses and the varied levels of support provided by school districts as follows:

Millions of students are taking supplemental online courses while attending a physical school. Many of these—the exact number is unknown—are recovering credits. Others are taking advanced, honors, or dual enrollment online courses that are not available as traditional courses. Still others are taking courses that are offered at their physical school, but are taking them online in an extra period, or over the summer, to gain scheduling flexibility. The extent to which the student’s enrolling school supports the online courses varies. In some schools the student is supported with a room, computer, and mentor. At the other end of the spectrum, some students take the online courses from home with no support from the physical school. Student success in online courses correlate with local school support. (p. 13)

As Galloway (1998) stated, “One should still consider issues of course quality, from the perspective of the student, when developing the course. One quality issue is if something more than a mere tutorial is being developed” (p. 1,209).

CHAPTER 3 METHODOLOGY

Introduction

The purpose of this research was to determine student perceptions of factors of the online course, perceptions of the importance of specific instructional components of the online course, and factors that relate to successful course completion. Successful course completion is defined as earning a 59.5% upon completion and an unsuccessful completion is earning less than a 59.4% upon completion. Students enrolled in online courses, with ABC Online Learning School, were administered a survey and results were analyzed along with successful course completion of the online course. This research was initiated only after the researcher had received approval from the University of Central Florida's Institutional Research Board (Appendix A).

Research Questions

The following research questions guided this study:

1. How do student perceptions of online course content, instructional design, student assessment and technology infrastructure relate to student perceptions of importance of specific instructional components of the online course?
2. How do students' perceptions of online course content, instructional design, student assessment, and technology infrastructure relate to online course completions?
3. What is the relationship between course completion and how the online course is developed: vendor-developed versus instructor-developed?
4. What is the relationship between course completion and the student taking an online course for original credit or credit retrieval/recovery?

Design of the Study

This study used a mixed method design. According to McMillan (2012), "...a mixed method design study involves combining quantitative and qualitative methods in a single study to capitalize on the strengths of both methods and form a more complete picture of the problem of practice (p. 317). In addition, Creswell (2008) stated, regarding mixed-method research designs, "When researchers bring together both quantitative and qualitative research, the strengths of both approaches are combined, leading, it can be assumed, to a better understanding of research problems than either approach alone" (p. 322). In this study, the researcher investigated student perceptions of the online courses, specifically related to the importance of instructional components and course completion.

The survey was created using the International Association for K-12 Online Learning (iNACOL) Standards for Quality Online Course Design (International Association for K-12 Online Learning, 2018) and the Southern Regional Educational Board (SREB) Checklist for Quality Online Course Design (Southern Regional Education Board, 2016). These two resources are divided into five groups: course content, instructional design, assessment, technology, and course management. For the purposes of this study and the intended audience, the Student Survey of Online Course Design (Appendix B) only used four groups: course content, instructional design, student assessments, and technology infrastructure. Within these four groups there were five to six questions, also derived from the iNACOL and SREB resources that pertained to the specific groups.

Research Question 1 was used to gather data that will help to determine if there was a relationship between student's perceptions of online course content, instructional design, student

assessment, and technology infrastructure and their perceptions of the importance of specific instructional components. These specific instructional components included a clear explanation of expectations to be successful, learning activities aligned to the stated objectives, list of objectives and activities found in each lesson, clear outline of instructor's availability, allowing student choice in assignments and assessments, and ease of navigation. The Spearman correlation is used to determine the strength of relationship between the variables (Field, 2016). In a Spearman correlation, the relationship between variables is described as monotonic, meaning that as one variable increases, the other variable will increase and that as one variable decreases, the other variable will decrease. A Spearman correlation was used to determine the strength of the relationship between the continuous variable (four factors) and the ordinal variable (perception of importance).

Research Question 2 also used a Spearman correlation, used to determine the strength of relationship between the variables, to determine if students' perceptions of course content, instructional design, student assessment, and technology infrastructure were related to successful course completion. The Student Survey of Online Course Design included questions that correlated to course content, instructional design, student assessment, and technology infrastructure. The ordinal variable included the perception of importance, and the dichotomous variable was successful completion and unsuccessful completion. A Spearman correlation was used to determine the strength of the relationship between the dichotomous variable (completion or non-completion) and the ordinal variable (perception of importance).

The third research question also used a logistic regression to determine if there was a significant relationship between successful course completion and how the course was

developed, (i.e., vendor-developed or instructor-developed). The dichotomous outcome variable was course completion and the dichotomous predictor variable was how the course was developed.

The fourth research question used a logistic regression to determine if there was a significant relationship between successful course completion and whether the student was taking the course for original credit or for credit retrieval/recovery. The dichotomous outcome variable was course completion, and the dichotomous predictor variable was if the course was taken for original credit or credit retrieval/recovery.

This study was intended to contribute to the factors that lead students to completion. Research Questions 1 and 2 addressed student perceptions and Research Questions 3 and 4 were concerned with the dichotomous demographic variables. This research will serve to advise ABC Online Learning School and its administration to make informed, student-directed decisions regarding factors to be considered when purchasing or designing online content.

Participants

ABC School District (ASD) served over 63,000 students in K-12 schools and programs during the 2016-17 school year. The school district had 10 high schools, 13 middle schools, 46 elementary schools, 1 online school, 7 charter schools, and numerous alternative education sites.

ABC Online Learning School served as the online school for the district with 143 students enrolled in the full-time online school during the 2016-17 school year. The numbers for the part-time online school are based on unique courses taken in that year (i.e. students could take more than one course). For the 2016-17 school year, ABC Online Learning School had just fewer than 7,500 total course completions for all programs, with just over 5,100 of those

completions being supplemental online courses (Stalker, 2017). ABC Online Learning School employed 22 full-time online instructors as well as two adjunct instructors (work completed outside of their normal work day).

The high school part-time online students made up most of the part-time online students. Students take courses that are not offered at their brick and mortar schools (e.g., Chinese), or courses for credit recovery. These students can be (a) dual enrolled students who are taking courses at a college campus, (b) those students taking online high school credit courses, or (c) those who want flexible scheduling. Additionally, ABC Online Learning School does not have requirements for taking an online course and is not allowed to drop students due to inactivity. Students have access to all online courses with school counselor approval.

The research driving this study was important to the ABC administration because students were taking ABC Online Learning School courses to earn credit, promotion, and ultimately a high school diploma. It was and continues to be significant because each online course that is completed, with a student earning 60% or better, is funded by the state of Florida based on the state-funding model (Barnard & Echols, 2015). To provide the best learning experience for these students, it was important to determine the factors that lead to student completion and achievement in online courses. Determining the content and course features that students prefer would allow teachers and/or course developers to focus their course development and course revision efforts to better utilize student preferred features when appropriate.

The sample for this study was based on purposeful criterion sampling that included students in Grades 6-12 taking an online course via the ABC Online Learning School. Purposeful criterion sampling happens when the researcher selects participants based on specific identified

characteristics to obtain needed information (McMillan, 2012). For this study, the selection of participants was based on the following criteria: grade level and type of online course.

A survey was placed in each course as an assignment that needed to be completed by a certain date. ABC Online Learning School had 3,015 single course enrollments in 2017-18. The survey was distributed to all students taking a high school credit course (approximately 2650 courses) with participation being voluntary. One hundred and sixty-eight surveys were started and, depending upon the data needed, 121 were completed.

Instrumentation

Due to limited availability of student perception surveys directly related to K-12 course design, the survey instrument was created from two existing instruments that have been used to measure online course quality. With the permission of the instruments' creators (Appendix A), two instruments were used to guide the creation of questions that were appropriate for the 6-12 student sample and aided in answering the research questions.

The first resource used in the development of the survey instrument was the International Association for K-12 Online Learning (iNACOL) National Standards for Quality Online Courses (v2). The iNACOL standards are divided into five sections: content, instructional design, student assessment, technology, and course evaluation and support (International Association for K-12 Online Learning, 2018). iNACOL asserted that these standards can be used and modified as needed to meet the individual needs of each district or educational entity. These standards were used to guide the creation of survey items that addressed the needs of the student population sample used in this study.

The second resource used in the development of the survey instrument was the Southern Regional Education Board's (SREB) Checklist for Evaluating Online Courses (Southern Regional Education Board, 2016). This resource is much like the iNACOL resource in that it is divided into sections: content, instructional design, student assessment, technology, and course evaluation and management. It was designed to ensure that online courses provide students with access to quality instruction and resources (Southern Regional Educational Board, 2016). Again, this resource was used as a guide to formulate questions for the survey instrument to address the needs of the students participating in this study.

These two sources provide the gold standard in online course evaluations for professional development, online teaching, and online courses in higher education and K-12 settings. Each online course evaluation rubric was compared, standards were chosen based on their relationship to the research questions, and items were modified using student friendly language. For the purposes of this study, course evaluation and support (iNACOL) and course evaluation and management (SREB) was not included in the final survey instrument to direct the focus of the instrument toward the online course components and direct the focus away from actual instructional practices.

As a result, one instrument, Student Survey of Online Course Design (Appendix B), was used to measure students' perceptions of the factors in the online courses, the perception of importance, and course completion. The instrument was divided into three sections. The first section (items 1-11) generated self-reported demographic data: gender, grade level, grade point average, graduation year, name of online course, number of online course(s) taken previously, online platform used (Canvas, Odyssey, etc.), where students work on the online courses, and if

course was being taken for original credit or credit retrieval. Course completion, as determined by official earned grade, was gathered as additional quantitative data.

The second section of The Student Survey of Online Course Design contains 29 statements (items 12-14) focused on four specific topics related to online course design: course content (items 12-17), instructional design (items 18-22), assessment (items 23-28), and technology infrastructure (items 29-34). Students were asked to respond to a 5-point Likert-type scale with response choices being 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=I Don't Know. The Likert-type scale items (survey items 12-34) generated quantitative data.

The third section, Other, included six items (survey items 35-40) designed to generate quantitative data that reflected the level of importance of certain factors from the students' perspectives. Items 41 & 42 simply asked students if they liked their courses and if they would take another online course with ABC Online Learning School. The four open-ended items (items 43-46) that were designed to gather qualitative data regarding specific factors that students liked or disliked about the courses and the factors that they perceived as helpful or challenging to course completion.

Data Collection Procedures

Multiple data sources are used to obtain quantitative and qualitative data to establish a well-rounded research study. The researcher gathered data from multiple sources (Baxter & Jack, 2008) to measure different facets of the topic and respond to the research questions. The primary source of qualitative data was the online student survey. The survey was embedded into each online course at approximately the 60% completion point as a required but not grades assignment

to increase the likelihood of survey response. The survey instrument, administered through Qualtrics, was provided to students in Grades 6-12 taking a high school credit online course through the ABC Online Learning School.

The purpose of this study was to collect and analyze qualitative and quantitative data to determine if there was a relationship between the data points used in the study. In addition to the survey items, course completion data were analyzed to determine if there was a relationship between the factors that students perceived as important to online course completion. All individual survey data, completion data, and achievement scores were kept confidential, and student names were not used in reporting the data. All data collected were stored electronically on a password-protected computer accessed only by the researcher. The steps in the data collection procedures specifically related to the use of the survey were:

1. The survey was created using the iNACOL Standards for Quality Course Design and the SREB Checklist for Quality Online Course Design. Both resources divide the standards into five groups. For the purposes of this research study, only four of the five groups were utilized: Course Content, Instructional Design, Student Assessment, and Technology.
2. The survey was submitted to the Instructional Review Board (IRB).
3. Once approved by the IRB (Appendix C), the link to the survey instrument, created in Qualtrics, was then placed in all ABC Online Learning School high school level courses.
4. Students were directed to complete the survey instrument as a required but ungraded assignment placed in their course or a link sent to the student by the instructor at the

- 60% completion point of the course.
5. The survey instrument, in Qualtrics, remained open for four weeks toward the end of the 2018 spring semester.
 6. Survey data were collected, downloaded to a secure server, and imported into Microsoft Excel and then imported into IBM SPSS for Windows.
 7. Data was eliminated based on the criteria where responses showed the same Likert response was chosen for each item (i.e. all chosen responses were a five), the course listed was inconsistent with courses offered by ABC Online Learning (i.e. basket weaving), and/or all Likert Scale responses left blank. The “I don’t know” responses were not included as part of the analysis.
 8. For survey questions 12-34, the Likert scale response data was calculated as individual’s average score for each instructional component group to create a new data set for course content, instructional design, student assessment and technology infrastructure.
 9. For all respondents, the researcher used the district’s student information system to determine each respondent’s final grade in the online course. This completion data was coded with a one for successful completion and zero for unsuccessful completion and entered to the survey data in IBM SPSS.
 10. For survey item 7, original credit was coded as a one and credit retrieval/recovery was coded as a zero in IBM SPSS.
 11. For survey item 8, the Canvas platform was coded as a one and all other platforms were grouped together and coded as a zero in IBM SPSS.

12. Student names were redacted.

13. The results were presented to show the analysis as related to each research question.

Data Analysis

The data points were analyzed using student responses retrieved from the Qualtrics survey and were analyzed using IBM SPSS for Windows. Table 4 presents the four research questions which guided the study, the statistical analyses selected to respond to each of the questions, and the rationale for the selection. Central to the analysis of the retrieved survey data was the use of the Spearman correlation and logistic regression analysis. The Spearman correlation was utilized to determine the strength of the relationship between student perception of importance, student perception of quality course design and completion data. The logistic regression was utilized to determine if the predictor variables of course developer and type of credit earned could determine successful online course completion.

Table 4

Research Questions, Statistical Analyses, and Rationale

Research Question	Statistical Analysis	Rationale
1. How do student perceptions of online course content, instructional design, student assessment and technology infrastructure relate to student perceptions of importance of specific instructional components of the online course?	Spearman Correlation $r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$	Used to determine the strength of the relationship between student perceptions and student perceptions of importance.
2. How do students' perceptions of online course content, instructional design, student assessment, and technology infrastructure relate to online course completions?	Spearman Correlation $r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$	Used to determine the strength of the relationship between student perception and successful course completions.
3. What is the relationship between course completion and how the online course is developed: vendor-developed versus instructor-developed?	Logistic Regression $P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 x_{ii})}}$	Used to predict if successful course completion is related to how the course was developed: vendor developed versus instructor-developed.
4. What is the relationship between the course completion and the student taking an online course for original credit or credit retrieval?	Logistic Regression $P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 x_{ii})}}$	Used to predict if successful course completion can be associated with an online course taken for original credit or credit retrieval.

Descriptive statistics were also used to examine the distribution of responses and understand patterns and trends that become evident as the data is analyzed. Descriptive statistics allows the reader to better visual the data that is presented in other ways (Field, 2016). It helps to

paint a more robust picture of the findings from the research study. Descriptive statistics also helps to determine topics that are worthy of further research.

Summary

This chapter restated the purpose of this research and presented the significance of the study. The participants were chosen based on grade level and type of online course in which they are enrolled. The data collection procedures and response rates were discussed along with the methods of data analysis. Analyzing these data points and determining the relationship between them can (a) inform decisions to build or buy online content, (b) inform best practices in online learning that may increase course completions and lead to increased funding, and (c) inform best practices to increase successful course completion and ultimately graduation.

The results of the data analysis are presented in Chapter 4.

CHAPTER 4 ANALYSIS AND RESULTS

Introduction

The purpose of this research study was two-fold. The initial purpose was to understand student perceptions of the supplemental online courses, i.e. part-time virtual courses, in which they were enrolled. The secondary purpose of the study was to use the findings to improve the program. Quantitative data were collected using the Student Survey of Online Course Design (Appendix B), which was derived from the iNACOL National Quality Standards for Online Courses and the Southern Regional Education Board Checklist for Evaluating Online Courses.

This chapter presents the results of the quantitative and qualitative analysis conducted to answer the four research questions that guided the study:

1. How do student perceptions of online course content, instructional design, student assessment and technology infrastructure relate to student perceptions of importance of specific instructional components of the online course?
2. How do student perception of online course content, instructional design, student assessment, and technology infrastructure relate to online course completions?
3. What is the relationship between course completion and how the online course is developed: vendor-developed versus instructor-developed?
4. What is the relationship between course completion and the student taking an online course for original credit or credit retrieval/recovery?

Demographic Data

This research study consisted of a sample of ABC School District students in Grades 6-12 who had taken an online course with ABC Online Learning School during the 2017-18 school year ($n = 128$). This mixed method research design used quantitative and qualitative data to answer the research questions and understand student perceptions of the online courses. Table 5 indicates the numbers and percentages of students at each grade level who responded to the survey they completed as a required assignment in their high school credit online course during the 2017-18 school year.

Table 5

Survey Completion: Students by Grade Level (N=128)

Grade Level	<i>n</i>	%
6	8	6.3
7	11	8.6
8	16	12.5
9	30	23.4
10	23	18.0
11	26	20.3
12	14	10.2
Total	128	100.0

After reviewing the total number of attempted surveys (128), the researcher analyzed the responses. Responses that included an unreasonable answer such as “Basket Weaving” listed as a course offering or Likert responses that were identical across all responses were eliminated from the sample. In addition, for each research question, the number of valid and complete responses varied. For example, for Research Question 1, the sample size for perception of course content

equaled 103 and perception of the importance of the instructional component equaled 100. However, when the variables were analyzed together, the analysis only included complete and valid answers for both variables. This strategy was used throughout the data analysis to ensure the clearest and most detailed picture of the results of the analysis for each research question.

Also, the Likert scale used in survey items 12-42 was based on a five-point response using Strongly Disagree (1), Disagree (2), Agree (3), Strongly Disagree (4), and “I don’t know” (5). The response, “I don’t know”, was not included in the statistical analysis for Research Questions 1 and 2 because the answer could not be clarified as to what the respondent did not know. The response, ”I don’t know”, could mean that the respondent did not understand the statement, did not know how to respond, or was apathetic. In future studies, it would be prudent for the researcher to require respondents to specify the meaning of the “I don’t know” response. Further explanation for omitting the “I don’t know” response is provided in Chapter 5.

Additionally, Research Questions 1, 2, and 3 were analyzed based on the descriptive statistics retrieved for each question. The descriptive statistics help to paint a more robust picture of the data retrieved and the meaning of that data for each question. The descriptive statistics are presented in tables and the data are explained in text prior to or following each relevant table.

The first stage of any data analysis is to explore the data collected to obtain ideas of any trends or patterns. In addition, it is important to see whether the data meet the statistical criteria necessary for the statistical procedure to be used (Field, 2016). It is also important to check the assumptions required of each statistical test. A monotonic relationship indicates that as one variable increases, the other variable increases. For logistic regression analysis, the assumptions, according to Li (2017) include for a binary regression,

the factor level 1 of the dependent variable should represent the desired outcome, only the meaningful variables should be included, the independent variables should be independent of each other. That is, the model should have little or no multicollinearity, the independent variables are linearly related to the log odds and logistic regression requires quite large sample sizes. (p. 1)

Statistical Assumptions

The Spearman correlation statistical assumptions were that variables were ordinal, ratio, or interval measurements. For Research Questions 1 and 2, the variables were ordinal. Another assumption of the Spearman correlation was that there was a monotonic relationship between the variables. Monotonic indicates that as one variable increases so does the other (Field, 2016). For Research Questions 1 and 2, the variables were monotonic. This will be discussed further for each research question.

Binary logistic regression was an appropriate statistical model when analyzing the ability of the independent variable to predict the outcome variable to respond to Research Questions 3 and 4. The dependent, dichotomous variable was successful online course completion or unsuccessful online course completion. For Research Questions 3 and 4, the independent variables, course developer and type of credit earned, were nominal. Variables were observed independently meaning that there was not relationship between the observations in each category of the dependent variable or the observations in each category of any nominal independent variables. A boxplot showed no significant outliers. The researcher could, therefore conclude that because there was only one independent variable, the assumption of no multicollinearity was met.

Research Question 1

How do student perceptions of online course content, instructional design, student assessment and technology infrastructure relate to student perceptions of importance of specific instructional components of the online course?

Data that were gathered to respond to Research Question 1 were analyzed using the Spearman correlation. Spearman's correlation is designed to measure the strength of relationship between two variables (Field, 2016). For this analysis, Spearman's correlation uses a continuous variable and an ordinal variable. The question sought to determine the strength of relationship between the continuous variable, student perceptions of the quality of the four factors (course content, instructional design, student assessment, and technology infrastructure) and the ordinal variable, students' perceptions of the importance of instructional components related to the four factors. The Spearman correlation formula used these data points to establish the strength of the relationship between the four continuous variables and the ordinal variables, separately. This means that each ordinal variable (student perception of importance) and each continuous variable (course content, instructional design, student assessment, and technology infrastructure) was calculated using the Spearman correlation.

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)} \quad (1)$$

The results from the survey were entered in the IBM SPSS for Windows statistical program. Tables 7, 9, 11, and 13 present the grouped items with responses and correlation coefficients interpreted as a value between -1, and +1. A negative relationship between variables

is indicated by -1, indicating as one variable increases, the other one decreases. A positive relationship between variables is indicated by +1 or as one variable increases, the other variable increases (Field, 2016). Tables 7, 9, 11, and 13 also illustrate the significance or insignificance of the relationship between the variables.

Survey items 12-34 (23 total items) were divided into four factor groups: course content, instructional design, student assessment, and technology infrastructure. Within each grouping, there were five to six statements with five possible responses with a corresponding numerical value (indicated in parenthesis): Strongly Disagree (1), Disagree (2), Agree (3), Strongly Agree (4), or I don't know (5). For each grouping, student responses were averaged, omitting the "I don't know" response (5) so that each respondent had one averaged score associated with each of the four factors. The "I don't know" response was not included in the statistical analysis for Research Question 1 because the answer could not be clarified as to what the respondent did not know.

Descriptive statistical data were presented in Tables 6, 8, 10, and 12. These data consisted of the number of times each Likert response was chosen. The "I don't know" response was included in these tables and was statistically significant because further research needs to be conducted on why respondents chose this response. Possible reasons for this choice include lack of knowledge regarding the meaning of the item or survey response fatigue. This response of "I don't know" is discussed after each of the tables (Tables 6, 8, 10, and 12).

Course Content

Online course content is evidenced by the opportunities for the learner to engage in the learning material that is aligned to specific standards (International Association of K-12 Online

Learning, 2018). Table 6 presents the descriptive statistics as represented by the total number of responses for survey items 12-17, related to online course content (the continuous variable), separated by Likert scale choices showing the numbers and percentages of total responses for each choice. Table 6 also presents the descriptive statistics of responses to survey items 35, 36, and 40 (the ordinal variables) which were related to student perceptions of the importance of the instructional design of online course content. These descriptors are: the importance of the course and instructor providing clear instructions regarding what is expected of me to be successful (item 35); knowing that the learning activities align with the stated objectives (item 36); and knowing methods to contact and the availability of the instructor (40). The statistics in Table 6 present the total number of respondents for each of the Likert scale choices for each question.

Table 6

Descriptive Statistics: Student Perceptions of the Quality of Course Content and the Importance of the Instructional Components

Survey Item	Strongly Disagree	Disagree	Agree	Strongly Agree	I do not know
Perceptions of Course Content (Total Responses = 128)					
The online course expectations were easy to understand. I knew what I have to do to be successful.	3	6	58	55	6
The learning activities relate to the learning objectives.	2	3	61	55	7
Before the course begins, learning resources and materials are available that prepared me for my online course.	9	7	60	39	13
Course requirements are clearly stated: student expectations, methods of communication, required materials, grading policy, time requirements, etc.	3	11	55	47	12
The instructor provides an introduction that clearly states availability and methods to contact.	4	1	49	67	7
The expectations for academic integrity, plagiarism, and netiquette (Internet etiquette) are clearly stated.	5	7	54	52	10
Importance of Instructional Components Total Responses (109)					
It is important to me that the course and instructor provide clear instruction regarding what is expected of me to be successful.	2	0	47	60	7
It is important to me that the learning activities align with the stated objectives.	2	3	48	56	7
It is important to me that the course and instructor provide clear instructions regarding instructor availability and methods to contact.	2	0	51	58	5

Table 6 displays the descriptive statistics retrieved for Research Question 1. The table indicates that a large majority answered, “Agree” or “Strongly Agree” for the items represented.

In addition, Table 6 presents the number of times the “I don’t know” response was chosen among responses. It is significant to note that the “I don’t know” response was chosen in 11 of 103 total responses for the item that states, “Before the course begins, learning resources and materials are available that prepared me for my online course.” Also, for the item, “Course requirements area clearly stated: student expectations, methods of communication, required materials, grading policy, time requirements, etc.,” the “I don’t know” response was chosen for nine of 103 total responses.

Table 7 presents the Spearman correlation that tested for the relationship between students’ perceptions of the quality of course content and their perceptions of importance of its instructional components. There was a statistically significant, strong positive correlation between, “knowing what is expected to be successful” and course content, $r_s(102) = .594, p < .001$. For the statement “knowing that the learning activities align with the stated objectives” and course content, there was statistically significant, moderate correlation $r_s(102) = .571, p < .001$. There was a statistically significant, weak correlation between “knowing when and how the instructor is available” and course content, $r_s(104) = .371, p < .001$.

Table 7

Spearman Correlation: Student Perceptions of the Quality of Course Content and the Instructional Components

Variable	1	2	3	4
1. It is important to me that the course/instructor provide clear instructions regarding what is expected of me to be successful.	1.000	.841**	.747**	.594**
2. It is important to me that the learning activities align with the stated objectives.	.841**	1.000	.671**	.571**
3. It is important to me to know how and when my instructor is available.	.747**	.671**	1.000	.371**
4. Item 12-17 Course Content	.594**	.571**	.371**	1.000

Note. **Correlation is significant at the 0.01 level (2-tailed).

Using IBM SPSS and the Spearman correlation analysis, it was found that there was a positive correlation between students’ perceptions of the importance of knowing that the learning activities aligned to the stated objectives, knowing the expectations to succeed, and knowing methods to contact and the availability of the instructor and the perceptions of the quality of online course content. This was interpreted to mean, as students’ perceptions of the importance of the course content instructional components increased, their perceptions of the quality of course content increased.

Instructional Design

Instructional design can be defined as, “the process by which instruction is improved through the analysis of learning needs and systematic development of learning experiences” (Kearsley & Culatta, n.d.). Instructional design seems like a simple factor to define; however, it

is very complex. For example, on the Instructionaldesign.org Website, known as the home for instructional designs for 20 years, there are more than 60 different instructional theories upon which this very complex instructional design ecosystem is based. According to Cavanaugh and Blomeyer (2007), instructional design is comprised of frequency and complexity of interaction, quality and content of feedback, and balancing comprehension with significance. From the previous descriptions/definitions, one can conclude that instructional design marries the learning objectives with the needs of the learner to create meaningful learning experiences.

Table 8 displays the total number of responses (n=102) for survey items 18-22, related to online course content, separated by Likert scale choices, showing the number and percentage of total responses for each choice. Table 8 also presents the total number of responses (n=100) for survey item 37 related to student perception of importance of the educational component.

Included in Table 8 are the descriptive statistics for the instructional design factor. Most respondents chose the “Agree” or “Strongly Agree” response. However, for the statement, “The course instruction includes a variety of activities that are engaging or keep me interested”, 14 respondents chose the “Disagree” response. Table 8 also indicates the number of times the “I don’t know” response was chosen among responses. It is significant to note that the “I don’t know” response was chosen in nine of 102 total responses for the item that states, “The course provided opportunities to engage in higher order, complex thinking activities”.

Table 8

Descriptive Statistics: Students' Perceptions of Instructional Design and the Importance of the Instructional Components

Survey Item	Strongly Disagree	Disagree	Agree	Strongly Agree	I do not know
Perceptions of Instructional Design Total Responses = 102					
The course instruction includes a variety of activities that are engaging or keep me interested.	8	18	53	36	6
The course is organized into units/modules and lessons that include learning objectives at the beginning of each.	3	2	51	60	5
Each unit and lesson include an overview that describes the objectives, activities, assignments, assessments, and resources.	3	5	54	55	4
The course provided opportunities to engage in higher order, complex thinking activities.	5	11	52	42	11
The course provides opportunities for appropriate instructor-student interaction including opportunities for timely and frequent feedback.	6	6	58	45	6
I have access to resources that enrich the course content.	2	5	64	42	8
Importance of Instructional Components Total Responses = 100					
It is important to me that I know what the objectives of each lesson and unit are and what activities will be available during the lesson/unit.	2	1	56	53	4

Table 9 presents survey items 18-23 as the continuous variable and representing statements related to instructional design. Survey item 37 relates to students' perceptions of the importance of knowing the objectives and activities available during the lesson or unit. This was

represented as the ordinal variable. The “I don’t know” response was not included in the statistical analysis for Research Question 1 because the answer could not be clarified as to what respondents did not know. There was a statistically significant, moderate positive correlation between, “knowing the objectives of each lesson” and instructional design, $r_s(107) = .503, p < .001$. Using IBM SPSS and the Spearman correlation analysis, it was found that there was a positive correlation between students’ perceptions of the importance of knowing the objectives and activities available during the lesson or unit and their perceptions of the quality of the instructional design. This was interpreted to mean that as students’ perceptions of the importance increased, the students’ perceptions of the quality of instructional design also increased.

Table 9

Students' Perceptions of the Quality of Instructional Design and the Instructional Components

Variable	1	2
1. It is important to me that I know what the objectives of each lesson and unit are and what activities will be available during the lesson/unit.	1.000	.503**
2. Items 18-22	.503**	1.000

Note. **Correlation is significant at the 0.01 level (2-tailed).

Student Assessment

The Southern Regional Education Board (2006) has defined student assessment to include the variety of assessments, resources, and materials available to online learners and the strategies uses to evaluate online learners that are found in course. Table 10 presents the total number of responses (n = 119) for survey items 23-28, related to online student assessment,

separated by Likert scale choices showing the number and percentage of total responses for each choice. Table 10 also presents the total number of responses (n = 100) for survey item 38, related to student perception of importance of the educational component. The descriptive statistics in Table 10 present the total number of respondents for each of the Likert scale choices for each question.

Table 10 displays the descriptive statistics revealed from the responses for survey items 23-28 and item 38. For items 23-26, 28, and 38, the highest numbers of responses were recorded for “Agree” and “Strongly Agree.” However, item 27 regarding offering choice in assignments indicated more responses for “Strongly Disagree”, “Disagree”, and “I don’t know.” In addition, Table 10 presents the number of times the “I don’t know” response was chosen among responses. It is significant to note that the “I don’t know” response was chosen in 16 of 119 total responses for the item that states, “The types of assessments in the course measure the state learning objectives.” Also, that response was chosen for 13 of 119 responses to the item stating, “Multiple methods of assessment are provided to show mastery of content”. Additionally, the “I don’t know” response was chosen in 12 of 119 responses for the item stating, “I was offered choice in assignments. I could choose how to show what I know.”

Table 10

Descriptive Statistics: Students' Perceptions of Student Assessment and the Importance of the Instructional Components

Survey Item	Strongly Disagree	Disagree	Agree	Strongly Agree	I do not know
Perceptions of Student Assessments					
Total Responses = 119					
The types of assessments in the course measure the state learning objectives.	3	1	66	33	16
Multiple methods of assessment are provided to show mastery of content.	6	4	63	33	13
The course provided ongoing, varied, and frequent assessments that were conducted throughout the course.	4	2	57	49	7
Assessments strategies, tools, and feedback allowed me to be continuously aware of my progress.	3	4	62	44	6
I was offered choice in assignments. I could choose how to show what I know.	12	11	52	31	12
The grading policy and practices were easy to understand.	6	3	61	42	7
Importance of Instructional Components					
Total Responses = 100					
It is important to me to have choice in assignments and in how I show what I know.	3	1	47	45	4

Survey items 23-28 represented as the continuous variable reflected statements related to the online student assessment as determined by iNACOL's Standards for Quality Online Course Design and the SREB's Checklist for Quality Online Course Design (see Table 11). These items were answered using a five-point Likert scale response choice of Strongly Agree (4) to Strongly

Disagree (1) with one of the choices being “I don’t know” (5). The “I don’t know” response was not included in the statistical analysis for Research Question 1 because the answer could not be clarified as to what the respondent did not know. Survey item 38 is related to student perception of the importance of having choice in assignments and in showing how the student knows what they know. This was represented as the ordinal variable.

There was a statistically significant, weak positive correlation between, “having choice in assignments” and student assessment, $r_s(107) = .328, p < .001$. Using IBM SPSS and the Spearman correlation analysis, it was found that there was a positive correlation between student perceptions of the importance of having choice in assignments and the perceptions of the quality of student assessment. Based on the analysis, as student perception of the importance increases, student perception of the quality of student assessment in the online course also increases.

Table 11

Spearman Correlation: Students’ Perceptions of Student Assessment and the Instructional Components

Variable	1	2
1. It is important to me to have choice in assignments and how I show what I know.	1.000	0.328**
2. Assessment	0.328**	1.000

*Note.***Correlation is significant at the 0.01 level (2-tailed).

Technology Infrastructure.

For the purposes of this research study, technology infrastructure includes accessibility of external links, use of online tools within the course, the ability and ease of logging into the course, accessibility of the instructional materials, and course software requirements (International Association of K-12 Online Learning, 2007). Table 12 illustrates the total number of responses (n=116) for survey items 29-34, related to online course content, separated by Likert scale choices showing the number of and percent of total number of responses for each choice. Table 12 also presents the total number of responses (n=100) for survey item 39, related to student perception of importance of the instructional component.

Table 12

Descriptive Statistics: Students' Perceptions of Technology Infrastructure and the Importance of the Instructional Components

Survey Item	Strongly Disagree	Disagree	Agree	Strongly Agree	I do not know
Perceptions of Technology Infrastructure					
Total Responses = 116					
The course is easy to navigate.	4	8	44	56	4
The course uses content specific tools and software (iXL, Microsoft products, digital textbook, etc.) appropriately.	3	6	60	38	10
Hardware, Web browser, and software requirements are clearly stated.	3	10	49	40	15
Technologies required in the course are easily accessed (external links, digital textbook, etc.).	2	6	62	42	5
My course required me to link out to other sites.	3	11	59	36	8
The instructional materials (readings, assignments, activities, etc.) were easily accessible.	3	4	59	41	10
Importance of Instructional Components					
Total Responses = 99					
It is important to me that the course is easy to navigate.	1	1	37	55	5

Table 12 displays descriptive statistics that show the distribution of responses with “Agree” and “Strongly Agree” being the most chosen responses. Items 31 (hardware, Web browser, and software requirements) and 33 (links to other sites) indicated more responses for the “disagree” choice than the other items. Table 12 presents the number of times the “I don’t know” response was chosen among responses. It is significant to note that the “I don’t know” response was chosen in 15 of 116 total responses for the item that stated, “Hardware, Web browser, and software requirements are clearly stated.” Also, the same response was chosen for 10 of 116 responses for two different items. The first item stated, “The course uses content specific tools and software (iXL, Microsoft products, digital textbook, etc.) appropriately.” and the second item stated, “The instructional materials (readings, assignments, activities, etc.) were easily accessible.”

The continuous variable, survey items 29-34, reflect statements related to the technology infrastructure in the online course as determined by iNACOL’s Standards for Quality Online Course Design and the SREB’s Checklist for Quality Online Course Design and are presented in Table 13. These items were answered using a five-point Likert scale response choice of Strongly Agree (4) to Strongly Disagree (1) with one of the choices being “I don’t know” (5). The “I don’t know” response was not included in the statistical analysis for Research Question 1 because the answer could not be clarified as to what the respondents did not know. Survey item 39 relates to student perceptions of the importance of navigation in the online course. This was represented as the ordinal variable.

The correlation coefficient for the statement regarding ease of navigation through the online course, $r_s(106) = .524, p < .001$, showed a moderate, positive relationship. Using IBM

SPSS and the Spearman correlation analysis, it was found that there was a positive correlation between student perceptions of the importance of ease of navigation and the perceptions of the quality of technology infrastructure. This was interpreted to mean, as student perception of the importance increases, the student perception of the quality of technology infrastructure in the online course also increases.

Table 13

Spearman Correlation: Students' Perceptions of Technology Infrastructure and the Instructional Design

Variable	1	2
1. It is important to me that the course is easy to navigate.	1.000	0.524**
2. Technology Infrastructure	0.524**	1.000

Note. **Correlation is significant at the 0.01 level (2-tailed).

In summary, Spearman's correlation analysis can be interpreted to mean that as student perception of the importance of specific instructional components that are related to the four factors increases so does student perception of the quality of those four factors of quality online course design. A positive relationship between variables is indicated by +1, meaning that as one variable increases, the other variable increases also (Field, 2016). For all factors, course content, instructional design, student assessment, and technology infrastructure, and the perception of importance items there was a positive strength of the relationship between variables.

Research Question 2

How do students' perceptions of online course content, instructional design, student assessment, and Technology Infrastructure relate to online course completions?

Research Question 2 was analyzed using the Spearman correlation. Spearman's correlation is designed to measure the strength of relationship between two variables (Field, 2016). For this question, Spearman's correlation used a dichotomous variable and the ordinal variable. For this specific analysis, the dichotomous variable was the student successful completion or unsuccessful completion of the online course and the ordinal variable is student perception of the quality of the four factors. The Spearman correlation formula used these data points to establish the strength of the relationship between the dichotomous and ordinal variables.

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)} \quad (2)$$

Table 14 exhibits the descriptive statistics that display the number of responses to survey items 12-34 where the respondents had course completion data in the district's student information system. As depicted, most respondents completed their course successfully. The completion data and the response data for items 12-34 ranged from 85.9% to 93.8% of respondents who successfully completed the online course.

Table 14

Descriptive Statistics: Course Completion and Instructional Components

Descriptor	Valid		Missing	
	N	Percentage	N	Percentage
Course Content & Complete	120	93.8	8	6.3
Instructional Design & Complete	114	89.1	14	10.9
Student Assessment & Complete	112	87.5	16	12.5
Technology Infrastructure & Complete	110	85.9	18	14.1

Tables 15-18 break down the student perception responses for each of the four factors of quality online course design: course content, instructional design, student assessment, and technology infrastructure. Student perception data for each factor was averaged for the number of responses for the Likert scale responses and compared to completion data. The “I don’t know” response was not included in the statistical analysis for Research Question two because the answer could not be clarified as to what the respondent did not know.

Table 15 compares the averaged Likert responses for student perceptions of course content with successful and unsuccessful course completion. Online course content can be defined as “providing online learners with multiple ways of engaging with learning experiences that promote their mastery of content and are aligned with state or national content standards”. (International Association of K-12 Online Learning, 2018, p. 7) As seen in the table, most respondents chose the “agree” or “strongly agree” response for survey items related to perceptions of course completions. Also, depicted in the table is that although 105 respondents successfully completed the online course, 14 did not.

Table 15

Descriptive Statistics: Course Completions and Student Perceptions of Course Content

Descriptor	Not Completed	Completed
Strongly Disagree	0	3
Disagree	5	16
Agree	8	71
Strongly Agree	1	25

Table 16 compares the averaged Likert responses for student perception of instructional design with successful or unsuccessful completions. As the table shows, most respondents successfully completed the online course and responded with “Agree.” The response of “Disagree” was chosen more times than in the previous table. Instructional design combines the learning objectives with the needs of the learner to create meaningful learning experiences.

Table 16

Descriptive Statistics: Course Completions and Student Perceptions of Instructional Design

Descriptor	Not Completed	Completed
Strongly Disagree	0	3
Disagree	5	13
Agree	7	59
Strongly Agree	1	26

Table 17 compares the averaged Likert responses for student perception of assessments with successful or unsuccessful course completions. Student assessment in an online course,

according to SREB (2006), includes the variety of assessments, resources, and materials available to online learners and the strategies uses to evaluate online learners that are found in a course. Respondents continued to choose mostly “Agree” and “Strongly Agree;” though “Disagree” did count for 19 of the 112 total responses. This indicates that of the 19 respondents who chose “Disagree” for items 23-28, 14 successfully completed the online course, but five did not.

Table 17

Descriptive Statistics: Course Completions and Student Perceptions of Assessment

Descriptor	Not Completed	Completed
Strongly Disagree	0	3
Disagree	5	14
Agree	6	63
Strongly Agree	1	20

Table 18 compares the averaged Likert responses for student perceptions of technology infrastructure with successful or unsuccessful course completions. Technology infrastructure can be described as accessibility of external links, use of online tools within the course, the ability and ease of logging into the course, accessibility of the instructional materials and course software requirements (International Association of K-12 Online Learning, 2007). As seen in Table 18, though “Agree” was most frequently chosen by respondents, 12 respondents chose “Disagree” and 19 respondents chose “Strongly Agree.”

Table 18

Descriptive Statistics: Course Completion and Student Perceptions of Technology Infrastructure

Descriptor	Not completed	Completed
Strongly Disagree	1	2
Disagree	3	16
Agree	6	72
Strongly Agree	1	20

For this analysis, the strength of relationship between student completion of the course was analyzed with student perception of the quality of the online course in relation to the four factors of quality online course design. Table 19 shows the four factors, course content, instructional design, student assessment, and technology infrastructure and completion with the statistical results of the Spearman correlation. The “I don’t know” responses were not included in the statistical analysis for Research Question 2 because the answer could not be clarified as to what the respondents did or did not know.

Table 19 presents the Spearman correlation that tested for the relationship between students’ perceptions of the quality of course content and successful course completions. The correlation coefficient for the four factors of quality online course design, as perceived by the students, indicated a slightly positive relationship, meaning that as student perception of quality increases the likelihood of successful course completion increases. Technology infrastructure and completion showed a significant relationship, $r_s(107) = .198, p = .040$. Additionally, instructional design, $r_s(112) = .222, p = .019$, and student assessment, $r_s(110) = .250, p = .008$,

indicated a significant relationship with course completion. However, for course content and completion, there was no correlation between variables, $r_s(116) = .170, p = .066$.

Table 19

Spearman Correlation: Student Completion of Online Course and Student Perceptions of Course Content

Variable	1	2	3	4	5
1. Course Content	1.000	.698**	.637**	.688**	.170
2. Instructional Design	.698**	1.000	.785**	.779**	.222*
3. Student Assessment	.637**	.785**	1.000	.774**	.250**
4. Technology Infrastructure	.688**	.779**	.774**	1.000	.198*
5. Course Completion	.170**	.222*	.250**	.198*	1.000

Note. **Correlation is significant at the 0.01 level (2-tailed).

Correlation is significant at the 0.05 level (2-tailed).

Research Question 3

What is the relationship between course completions and how the online course was developed: vendor-developed or instructor-developed?

Research Question 3 data were analyzed using the logistic regression model. The logistic regression model was used to determine if there existed a significant relationship between course completions and how the course was developed: vendor-developed or instructor developed.

Survey respondents were asked to indicate if the online course was accessed through Canvas, the

learning management system used by ABC Online Learning School or through another platform such as APEX, CyberActive, FuelEd, Odyssey or other. For the purposes of this research study, the courses located in Canvas were instructor-developed courses. All online courses accessed through other platforms, mentioned previously, were considered vendor-developed.

Figure 3 illustrates the percentages of students taking courses in the various platforms offered by ABC Online Learning School. Canvas (red) represents courses developed by the instructor, 91.79% of courses represented in this research study. The other platforms (Odyssey, Apex, CyberActive, and other) represent courses developed by a professional vendor and accounted for 8.21% of courses taken for this research study with Odyssey accounting for 3.73% and “other” platforms accounting for 4.48%.

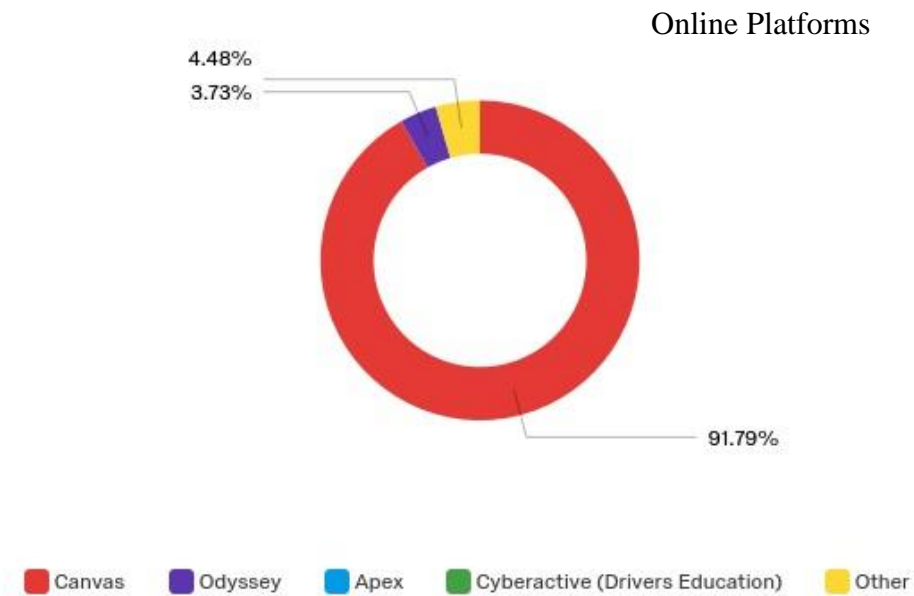


Figure 3. Percentage of students utilizing various online platforms

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 X_{ii})}} \quad (3)$$

For this question, the predictor variable was the developer of the online course, instructor-developed or vendor-developed, as defined by the platform that the students used to access their courses. An instructor-developed course was in the Canvas Learning Management System, and vendor-developed courses were accessed through the specific vendors' learning management systems. The outcome variable was course completion or non-completion. Table 20, a descriptive table, presents the data for the variables. Of the matched responses (completed survey item 7 and completion data), 116 of the courses were instructor-developed (Canvas) with 104 courses being successfully completed and 12 not being successfully completed. For those 10 students who took the vendor-developed online, five respondents indicated that their course was an Odyssey course and five indicated that their course was CyberActive, relabeled as other. Of those 10 students, eight successfully completed their courses and two students did not successfully complete their courses.

Table 20

Descriptive Statistics: Course Completions Based on Developer of the Online Course

Descriptor	Not Completed	Completed
Canvas	12	104
Odyssey	1	4
Other	1	4

Table 21 indicates that the developer of the online course was not a significant predictor of successful online course completion. For this study of 128 total respondents, 121 students responded, and completion was able to be determined using the district’s student information system data. A binominal logistic regression was performed to ascertain the difference in completion rates between the online courses that were developed by the instructor or the vendor. The logistic regression model was not significant, $X^2 (2) = 0.633, p= 0.426$. The model explained 1% (Nagelkerke R^2) of the variance in online course completion and correctly classified 88.3% of cases. Students taking an instructor-developed online course had 2.042 higher odds to complete their online course than those enrolled in a vendor-developed online course.

Table 21

Course Completion and Course Development

Descriptor	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP (B)	
							Lower	Upper
Canvas	0.714	1.159	0.379	1	0.538	2.042	0.211	19.798
Odyssey	0.000	1.581	0.000	1	1.000	1.000	0.045	22.175
Constant	1.386	1.118	1.537	1	0.215	4.000		

Research Question 4

What is the relationship between course completion and the student taking the online course for original credit or credit retrieval/recovery?

To analyze the data for Research Question 4, a logistic regression model was used to

compare the course completion with students taking the online course for credit retrieval/recovery (CR) or original credit (OC). This measure was used to predict if completion could be predetermined based on the type of credit the student was earning, CR or OC. The demographic portion of the student survey asked students to self-report the type of credit they were earning in their online courses. Respondents were given two choices: credit recovery/retrieval and original credit.

Figure 4 illustrates the percentages of respondents (n = 125) that enrolled in the online course for either original credit or credit retrieval/recovery. An original credit course was taken by 87.97% (n = 110) of respondents, and 12.03% (n = 15) of respondents took a course for credit retrieval/recovery.

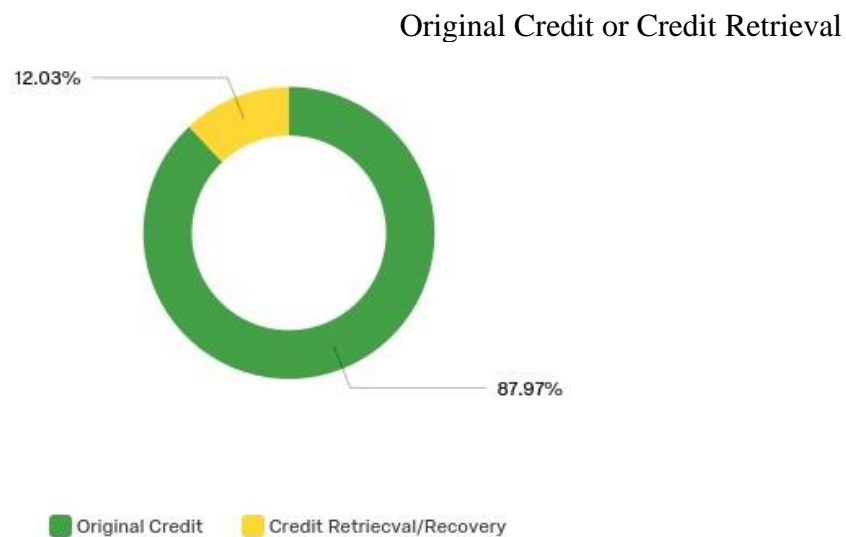


Figure 4. Percentage of students taking a course for original credit and credit retrieval/recovery

The predictor variable was the type of credit, original credit or credit retrieval/recovery, and the outcome variable was completion or non-completion of the course. The predictor variable was based on 128 valid responses for which 119 of the 128 total respondents answered the question (Q9). The dependent variable of completion or non-completion was determined using grade earned at the end of the course. For this study of 128 total respondents, 119 students responded, and completion was able to be determined using the district’s student information system data. Table 22 presents the data for both variables. Of the 119 matched responses (completed survey item 7 and completion data), 105 students took the online course for original credit with 95 successfully completing and 10 not successfully completing. For those 14 students who took the online course for credit retrieval/recovery, 12 successfully completed their courses. Only two students did not successfully complete their courses.

Table 22

Descriptive Statistics: Course Completion for Original Credit (OC) and Credit retrieval/recovery (CR) Courses

Descriptor	Not Complete	Complete
Original Credit	10	95
Credit Retrieval/Recovery	2	12

The logistic regression model was used to determine if there was a significant relationship between the predictor variable and the outcome variable. The following formula was used in the IBM SPSS program to calculate the probability that a student taking either a credit recovery/retrieval or original credit course would be likely to complete the online course. Table

23 presents that data and indicates that the type of course, original credit or credit retrieval/recovery, is not a significant predictor of successful course completion.

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_i X_{ii})}} \tag{4}$$

Table 23 indicates that the type of credit earned, original credit or credit retrieval/recovery, was not a significant predictor of successful online course completion. For this study of 128 total respondents, 121 students completed the response and completion was able to be determined using the district’s student information system data. A binominal logistic regression was performed to ascertain the difference in completion rates between the online courses that taken for original credit or credit retrieval/recovery. The logistic regression model was not significant, $X^2(1) = 0.172, p = 0.679$. The model explained 1% (Nagelkerke R^2) of the variance in online course completion and correctly classified 98.3% of cases. A student taking an online course for original credit had 1.424 higher odds to complete online course than those in a online course for credit retrieval/recovery.

Table 23

Relationship Between Course Completion and Course Type: Original Credit or Credit Retrieval/Credit Recovery

Descriptor	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP (B)	
							Lower	Upper
Original Credit	0.354	0.828	0.183	1	0.669	1.424	0.281	7.211

Constant	1.792	.764	5.504	1	0.019	6.000
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Ancillary Data Analysis

The survey instrument, Student Survey of Online Course Design, used for this research study also asked students to respond to open-ended items (survey items 43-46). The responses from the four questions were analyzed using Qualtrics. Significant words or statements were calculated as a percentage representing the number of times the word or phrase was in the response. Only those words or phrases with the highest frequency of occurrence were presented in the tables. The four items were:

- List what you liked most about your online course.
- List what you liked least about your online course.
- List specific components of your online course that helped you to complete the course.
- List specific components of your online course that were challenging.

The first two of the four items generated lists related to what students liked and disliked about the online course. The qualitative analysis of the student responses was used to examine repetitive statements and descriptive words that appeared in all responses. Figure 5 illustrates that respondents liked (a) courses they considered as easy, (b) courses that they could work at any time and pace, (c) the teacher, and (d) learning. Though flexibility was not directly mentioned, but working at one's own pace and time can be perceived as a trait of flexibility.

What did you like about your online course.

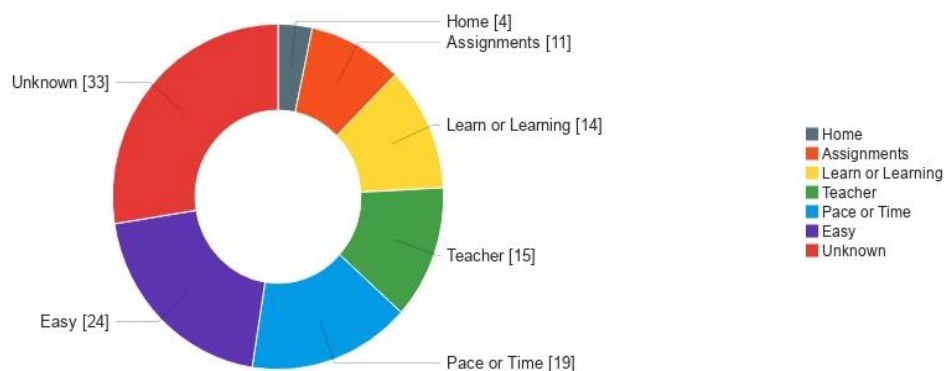


Figure 5. What did you like most about your online course?

Figure 6 shows the number of like answers based on students dislikes about their courses. For this question, there few repeating answers, and many of the responses fell into the category of “other.” However, (a) the teacher, (b) assignments and (c) perceptions of the amount of work led students to dislike their online courses. This information contained in Figures 4 and 5 may be important to know when evaluating online programs. The program can make changes based on student data to better meet the needs of the consumer.

What did you like least about your course?

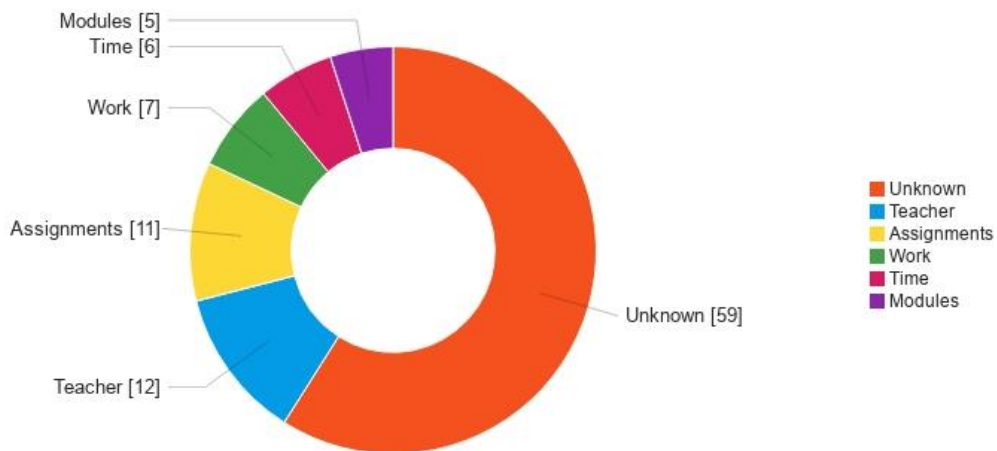


Figure 6. What did you like least about your online course?

The last two items of the Student Survey of Online Course Design instrument were qualitative and open-ended questions. Survey item 45 asked respondents to list specific components of the course that students perceived as helping them to complete the course. Utilizing a feature in Qualtrics to create a Word Cloud where the most commonly occurring words are a larger font and a darker color, Figure 7 displays the data from the list of words or phrases that students perceived as helping them to complete the online course.

Table 24

Survey Item 45: Specific Online Course Components That Help Students Complete Online Courses

Word or Phrase	% of Total	Count
Understand	2.70	2.997
Format	2.70	2.997
Test	2.70	2.997
Grade	5.40	5.994
Time	6.30	6.99
Video	7.20	7.992
Easy	8.10	8.99
Course	10.80	11.988
Teacher	14.40	15.984
Unknown	39.70	44.067

The last survey question (survey item 46) asked respondents to list specific components of the online course that were challenging. Figure 8 was created using no more than 50 of the most common words found among the answers, with those that appeared the most frequently being larger in size. The word that stands out the most is “assignment.” Other larger font words were “submit,” “test,” course,” and “nothing.” These prominent words would require more in-depth questioning regarding what specifically about the assignments, tests, and course were challenging responses to survey item 46

Table 25

Survey Item 46: Specific Challenging Online Course Factors/Features/Components

Word or Phrase	% of Total	Count
Power Point	3.26	3
Finding	4.35	4
Work	4.35	4
Staying on Pace	5.43	5
Submitting	6.52	6
Tests	9.78	9
Nothing	10.87	10
Assignments	11.96	11
Unknown	43.48	40

Summary

The purpose of this study was two-fold. The initial purpose was to understand student perceptions of the supplemental online courses, i.e. part-time virtual courses, in which they were enrolled. The secondary purpose of the study was to use the findings to improve the program. The researcher used archival data retrieved during the spring semester of the 2018 school year in ABC School District. The Student Survey of Online Course Design was distributed to all ABC Online Learning School students in Grades 6-12 taking an online course for high school credit. Of the distributed surveys, 128 were completed and used in this study. Teaching presence from the Community of Inquiry theoretical model, along with student-engagement from Borup’s Adolescent Community of Engagement and Learner-content Interaction from Moore’s Three

Types of Engagement, speak to the importance of developing online courses that engage the student. This study aimed to gather data regarding what students perceived as important in quality online course design and which factors students perceive as leading to successful course completion.

CHAPTER 5 DISCUSSION AND CONCLUSION

Introduction

Chapter 5 presents a discussion of analysis of findings from Chapter 4 and explores areas that would be important to research further. The purpose of this study was two-fold. The initial purpose was to understand student perceptions of the supplemental online courses, i.e. part-time virtual courses, in which they were enrolled. The secondary purpose of the study was to use the findings to improve the online program in ABC School District. The Community of Inquiry theoretical framework, along with the Three Types of Interaction and the Adolescent Community of Engagement, served as a foundation for this research study, as all three provide concepts regarding online course design. Kuong's research in 2009 showed that students' perceptions of a learning environment are positively related to their subsequent learning behavior and the quality of their learning outcomes. The programs that have been responsible for the delivery of courses have not been required to determine what factors will likely produce a successful completion.

The setting of this study was a K-12 online school, ABC Online Learning School, in the ABC School District. The study focused on students in Grades 6-12 taking an online high school credit course. The Student Survey of Online Course Design was distributed to students through the online course in the Learning Management System. There were over 2,000 courses taken in the Spring of 2018. Of the 128 students who attempted to complete the survey; 27.4% were in Grades 6-8 and 72.6% were in Grades 9-12. A total of 130 students completed enough of the survey to be included in this research study. The quantitative data were obtained from Likert scale survey items, and the qualitative data included responses to open-ended questions. The

Spearman correlation and a logistic regression formula were used within the IBM SPSS online program to analyze student responses. The qualitative data were input into Microsoft Excel to analyze frequency of occurrence of responses to open-ended survey items (items 43-46).

The following research questions guided this study:

1. How do student perceptions of online course content, instructional design, student assessment and technology infrastructure relate to student perceptions of importance of specific instructional components of the online course?
2. How do student perception of online course content, instructional design, student assessment, and technology infrastructure relate to online course completions?
3. What is the relationship between course completion and how the online course is developed: vendor-developed versus instructor-developed?
4. What is the relationship between course completion and the student taking an online course for original credit or credit retrieval/recovery?

Discussion of Results of Analysis: Research Question 1

How do student perceptions of online course content, instructional design, student assessment and technology infrastructure relate to student perceptions of importance of specific instructional components of the online course?

To answer Research Question 1, a quantitative approach was used by placing numerical values on responses in a Likert scale survey for items 35-40 using a range of Strongly Disagree (1) to Strongly Agree (4) with the response, “I Don’t Know” added as a choice (5). Although the “I don’t know” responses were used in the descriptive statistics to show the number of responses for each of the Likert scale responses, the “I don’t know” response was not used in the Spearman

correlation analysis. “I don’t know” was not used because respondents were not asked to clarify if this response was due to not wanting to answer or not understanding the statement. Survey items 35-40 were aligned to match the four-quality online course design groups: course content, instructional design, student assessment, and technology infrastructure. Individual student Likert responses were scores from 1-5 and averaged for each group, giving each student four total scores ranging from 1-5 for each group. Each score was analyzed against the dichotomous outcome variable, student’s successful completion (value = 1) or unsuccessful completion (value = 0). There were 113 responses that were completed with responses being able to be matched to completion data and then to be used for further analysis.

The results of the Spearman correlation statistical analysis revealed that there was a positive strength in the relationship between the variables. These findings support that as student perception of the quality of the factor increases then the student perception the importance of the factor increases as well. For example, survey item 35 stated, “It is important to me that the course and instructor provide clear instructions regarding what is expected of me to be successful.” This statement is associated with the online course design factor of course content. To continue, survey item 36 stated, “It is important to me that the learning activities align with the stated objectives” and survey item 40 stated, “It is important to me to know how and when my instructor is available,” all relating to online course content. After analyzing using Spearman’s correlation, these statements were determined to have a positive strength of relationship with course completion, meaning that if the course provided clear instructions to be successful, the learning activities align with the objectives and knowing how and when to reach the instructor, the student perceived the course content as being of high quality.

Cavanaugh and Blomeyer (2007) listed many elements that lead to the quality of online courses. Some of the qualities related to this study include ease of access, clear objectives, choices, links and resources, measurable objectives and engaging curriculum. Student perceptions of these factors as they relate to the course quality have the potential to impact student motivation to complete the online course. Crews, Bordonada, & Wilkinson (2017) reported that though students' lack of motivation is a barrier to student success in an online course, ensuring the usability and engagement of the course through quality course design increases student motivation.

The implications of these results for ABC Online Learning School and ABC School District include: (a) focusing on the review and revision of courses to meet the needs of the students taking an online course, (b) implementing review and revision practices for each online course to ensure that quality standards are met, and (c) continuing the use of student perception surveys in addition to student focus groups and interviews to ascertain the specific components of the online course that students perceive as being of quality and importance.

The first implication, review and revision based on student need, can be addressed to ensure that, as student needs change, the course meets these changing needs. This review and revision is linked to the third implication, and student need should be coupled with student surveys, focus groups, and interviews. The second implication, the implementation of review and revision practices, is an important aspect to program evaluation. According to Gemin et al. (2015), to maintain quality online courses, the courses must be reviewed to meet course standards and the standards of quality online course design.

Discussion of Results of Analysis: Research Question 2

How do students' perceptions of online course content, instructional design, student assessment, and technology infrastructure relate to online course completions?

The purpose of Research Question 2 was to determine if students' perceptions of their courses, based on the four factors of quality course design, had a significantly positive or negative relationship to course completions. A quantitative approach was used by placing numerical values on responses in a Likert scale survey for items 35-40 using a range of Strongly Disagree (1) to Strongly Agree (4) with the response, "I Don't Know" added as a choice (5). Although the "I don't know" responses were used in the descriptive statistics to show the number of responses for each of the Likert scale responses, they were not used in the Spearman correlation analysis. It was excluded because respondents were not asked to clarify if this response was due to not wanting to answer or not understanding the statement. Individual student Likert responses were scores from 1-5 and averaged for each group, giving each student four total scores ranging from 1-5 for each group. Each score was analyzed against the dichotomous outcome variable, student's successful completion (value = 1) or unsuccessful completion (value = 0). There were 128 total responses, but only 109 that were adequately completed, meaning the surveys were completed for the needed data and were able to be matched to completion data to be used for this analysis.

The results of this analysis indicated that there was a significant relationship between student perceptions of course quality based on the factors of instructional design, student assessment, and technology infrastructure and successful course completions. This meant that as student perception of quality increased, the likelihood of successfully completing the course

increased. However, there was no significant correlation for course content and completions. In summary, the higher quality of online course could be used to predict successful completion of the online course. For example, as students' perceptions of the quality of a course's technology infrastructure increased, specifically ease of use of technology tools in the online course, the likelihood that students would complete the course increases as well. Technology infrastructure turned out to have the highest strength in relationship to course completion. Having choice in assignments had the lowest strength in relationship with course completions.

Simunich, Robins, & Kelly (2015) linked online course design to findability. This can be defined as the ability to locate specific objects, in this case specific components of the online course. For this study, technology infrastructure was interpreted to include ease of navigation, number of links outside of the course, finding assignments, ability to submit items, and more. Simunich & et al (2015) stated that "findability is paramount to student success and could impact student learning and course attrition" (p. 174). Because the relationship between technology infrastructure and course completion was the strongest of the factors, it makes sense to design courses or purchase course content that eliminates technology infrastructure barriers for students.

Additionally, in Florida, funding for virtual schools is earned when a student successfully completes the course, and this completion-based funding is earned by the district or vendor who is providing the instructor. Therefore, if ABC Online Learning builds a course that the student successfully completes, the district receives the funding. If the student takes a course with a vendor as well as an instructor, the vendor will receive the funding. Thus, it is in the best interest of the district to promote successful course completion by providing students the courses that are engaging and perceived by students to be of high quality.

For ABC Online Learning School and ABC School District, the implications are simple. Practices, such as continuous and consistent course review and revision must be created and implemented with fidelity to ensure that the online courses in which students enroll are technologically sound and engaging. According to the theoretical frameworks that guided this study, Three Types of Interaction (Moore, 1989), Community of Inquiry (Akyol et al, 2008), and the Adolescent Community of Engagement (Borup et al, 2014), student engagement in courses increases student motivation to complete. Successful course completion leads to increased graduation rates and increased school funding.

Discussion of Results of Analysis: Research Question 3

What is the relationship between course completions and how the online course was developed: vendor-developed or instructor-developed?

The purpose of Research Question 3 was to determine if there was a significant relationship between successful course completion and course development. To analyze the results, a logistic regression analysis was utilized to establish if the type of course in which a student was enrolled, vendor developed or instructor developed, could predict if students would successfully complete their courses. The results indicated that there was not a significant relationship between course completions and the developer of the course. Thus, for Research Question 3, a course of better quality, as determined by the students or researchers, could not predict increased successful course completions.

As discussed previously, there are benefits and pitfalls to each option. The benefits to purchasing curriculum include allowing for a quicker start up, alignment to national standards, and the ability for the vendor to develop engaging and interactive content. The pitfalls include

lack of allowable customization or lack of flexibility within the content and costly subscription or licensing fees. The implementation of instructor-developed online content and courses also has benefits and downsides. According to iNACOL (2018), the benefits include direct alignment to the district standards, flexible customization, and long-term cost savings. Additionally, the negatives include high upfront costs associated with the need for highly skilled personnel to build the content (International Association of K-12 Online Learning, 2018).

Florida has become one of front-runners in the development and implementation of online K-12 learning solutions by legislating (Florida Statute 1003.498) that all K-12 public school students have full-time and part-time virtual options. In addition, Florida legislation requires that state funding follow the student to the supplier of the course. In Florida, districts are only funded for virtual courses if the course is completed successfully. Florida school districts contract with online vendors to supply course content due to the time and resources involved in building courses AND allow their instructors to build courses because one size does not fit all. Curtis and Werth (2015) stated, “Online learning is often difficult to define because there is no one size fits all model. The same is true of online content” (p. 171).

The implications for ABC Online Learning School and ABC School District include shifting the focus from solely instructor-developed courses to providing the courses that best meet student needs--instructor-developed or vendor-developed. Ferdig and Kennedy (2018) reported,

Only 37.4 percent of full-time online schools overall received acceptable ratings from the state. The on-time graduation rates in full-time online schools overall (43.4%) fell far

short of the national average of 82.3%. While this data is specific to full-time online schools, it is similar for part-time online course enrollments. (p. 121)

Additionally, “Building course sites carefully and thoughtfully and reviewing course design regularly to identify what methods are effective and which are not matters” (Ferdig & Kennedy, 2018, p. 475). The online course matters.

Discussion of Results of Analysis: Research Question 4

What is the relationship between course completions and if the online course was taken for original credit or credit retrieval/recovery?

For Research Question 4, a simple logistic regression was used to predict which of the two categories, successful completion or unsuccessful completion, a student would belong to as represented by the type of course credit: original credit or credit retrieval/recovery (Field, 2016). There are many issues that surround original credit and credit/retrieval online course offerings that include the complexities of some of the more systemic challenges in K-12 education, such as school counseling services, retention, diverse populations, language barriers, instruction and other services offered by the brick and mortar school. According to Repetto & Spitler (2014), because online instruction offers flexible scheduling, varied methods of teaching, course availability and safe communities in which to learn, online learning has become a highly used option to keep students on the path to a high school diploma and a better way of life.

For ABC Online Learning School, the distinction between original credit and credit retrieval/recovery online courses means the difference between length of time in a course, mastery of standards, choice in vendor products, and graduation rates. In this study, taking the

course for original credit or credit retrieval/recovery was not a significant predictor of success or lack of success.

There are many factors that motivate or influence students to successfully complete online courses. For future practice, it is important to know which courses a student is required to take to know what online course products meet the needs of the individual students. Researchers have determined that all students need to see the connection between what is being learned and the real world, especially at-risk learners, including students taking a course for credit retrieval/recovery (Repetto & Spitler, 2014). For ABC Online Learning, it is important to find or build courses with all learners in mind to accommodate for various needs and abilities. Repetto and Spitler (2014) continued stating that

Due to its flexible scheduling, individual mentoring, safe communities in which to learn, and varied methods of teaching, online learning has shown promise as a conduit to engage at-risk students in learning so that they stay in school and earn a diploma. (p.133)

Discussion of “I Don’t Know” Responses

The response choice of “I don’t know” is considered by researchers as a nonresponse or as not providing substantive information (Manisera & Zuccolotto, 2014). According to Young (2012), “Non-substantive responses occur when respondents indicate that they are unsure, undecided, cannot recall, don’t know, or have no idea” (p. 23). “The main motivation supporting the inclusion of the *dk* option is [to force] the respondent to answer all the questions,” (Manisera & Zuccolotto, 2014, p. 226). The decision to include the “I don’t know” response in the Student Survey of Online Course Design was made to give respondents an option to choose when they did not understand the content or context of the survey item. It was understood by the researcher

that this response could be chosen as an “easy answer,” one that would lead to completion of the survey. However, as stated by Young (2012), “Understanding these responses is important for clear survey design and for identifying sensible methods to handle these responses in data analysis (p. 23).”

Implications for ABC Online Learning School and ABC School District include: (a) consider developing a survey instrument that omits the “I don’t know” as a response choice, (b) continue the use of the “I don’t know” response choice but include a forced clarification question to gain more data, and (c) provide additional clarity in individual survey items. The first option, to omit the “I don’t know” response choice, would force all respondents to choose one of the responses offered without giving the respondents an easy out. This could, however, produce false data if respondents truly do not know the answers to items. The second option, forcing a clarification question for “I don’t know” responses, allows respondents to provide details as to why the response was chosen. This could be implemented through the forced use of a “Fill in the blank” item in which respondents list the reasons why they chose the answer. The researcher could then analyze all responses to ascertain possible trends and areas that need further research. The third option of providing clearer language for each survey item would allow respondents to better understand what is being asked in each item. This could be implemented by evaluating previous survey items for trends in “I don’t know” responses to determine which questions need clearer language. Another option would be having a sample of the target population read the survey items, provide feedback on their misunderstandings, and edit the survey for further clarity using the feedback provided.

For the purposes of this study, Table 26 outlines the number of times “I don’t know” responses were chosen. The implications of these data may lead to further research on specific areas, such as student assessment and technology infrastructure, that yielded higher “I don’t know” responses.

Table 26

“I don’t know” Response for Research Question 1

Course Quality Factors	Survey Item	“I don’t know” responses
Course Content	Course quality	41
	Importance	13
Instructional Design	Course quality	28
	Importance	2
Student Assessment	Course quality	61
	Importance	4
Technology Infrastructure	Course quality	52
	Importance	5

Discussion of Ancillary Data Analysis

Qualitative research methods allow the flexibility to identify themes from the responses. Using survey items 43-46, themes may be created based on the frequency of responses for each item. For survey item 43, “What did you like most about your online course?” the most frequent responses included learning, flexibility of time and pace, and the teacher. The most frequent responses for survey item 45, “What specific components of your course helped you to complete

your course?”, was teacher, time, and the course. The dominant themes for both survey items was the teacher and flexibility of time and pace.

For survey item 44, “What did you like least about your online course?” the most frequent responses included teachers and the amount of work required in the course. The most frequent responses for survey item 46, “What components of your online course were challenging?” included assignments and tests. The common theme among responses for these items was the amount of work and assessments in the course.

These data can be used to guide the design of online courses and online instructional strategies to focus on themes that students report as positive for their online courses (e.g., flexibility and the teacher). Further research on the specific qualities that students like about their teachers is needed to ascertain the qualities that help motivate students to complete online courses. According to Hung, Hsu, and Rice (2012), students with successful course completions usually have shown higher course satisfaction in self-report surveys.

Significance of Study

The growth in the numbers of students learning online and the importance of online learning as a solution to educational challenges has increased the need to study more closely the factors that affect student learning in online schooling environments (Cavanaugh et al., 2008). A successful course completion was defined by the ABC School District’s Pupil Progression Plan (n.d.) as a course that is completed with a grade of 59.5% or higher, and an unsuccessful completion was considered as earning a final grade of 59.4% or lower; however, there have been no evaluative studies based on course content that explain why students do or do not successfully

complete the online courses. The programs that have been responsible for the delivery of courses have not been required to determine what factors will likely produce a successful completion.

Researchers have indicated that given instruction of equal quality, groups of students learning online generally achieve at levels equal to their peers in classrooms (Gemin & Pape, 2017; Kearsley, 2000). ASD's online program has experienced growth but has also experienced growing pains. These growing pains include finding the answers to challenges such as technology infrastructure barriers, course content providers or suppliers, support for online learners, best practices in online teaching, and increasing the number of successful course completions.

There are two primary factors related to the significance of this study. The ultimate reason is because successful completions generate funds for the ABC School District. At the same time, successful completions enhance students' options for earning the credits needed for graduation.

Recommendations for Future Research

K-12 online learning is a relatively new area of research. With the exponential growth seen since the beginning of the 21st century, the areas for further research are endless. The following areas in need of further research, based on the findings in this research study and a current review of literature, are as follows:

K-12 Online Learning

- Further research should be conducted on all aspects of K-12 online learning in general due to the predicted continual growth.
- Further research should be conducted on K-12, blended learning versus online

learning, based on student assessment and earned grade outcomes.

- Further research should be conducted on K-12 online learning and diverse populations. Is the issue of equity being addressed?
- Further research should be conducted on the availability of full-time and part-time virtual opportunities for diverse populations, equity in online education.
- Further research should be conducted comparing the outcome of students enrolled in various online learning programs around the United States and the world.

Funding of Virtual Education

- Further research should be conducted on the implications of virtual options on federal and state educational funding.
- Further research should be conducted on the funding implications for student attrition in online courses.
- Further research should be conducted on the funding and salary schedules for virtual instructors.

Online Instruction

- Further research should be conducted regarding the impact of the online instructor on successful course completions in the K-12 learning environment.
- Further research should be conducted regarding the effect sizes of online instructional strategies.

Online Student Perceptions and Feedback

- Further research should be conducted regarding K-12 student perceptions of quality of online course design with a larger sample size.

- Further research should be conducted regarding the use of K-12 student surveys of online courses to drive quality online course design and instruction.
- Further research should be conducted regarding specific reasons K-12 students would answer “I don’t know” to statements when using this survey instrument.

Conclusion

The goal for this research study was to explore the factors of the online that K-12 students perceived as important to successful online course completion. According to Kilic-Cakmak, Karatas, and Ocak (2009),

Students’ perception of online course quality failing to meet their expectations is certainly a factor influencing attrition. This is especially true in e-learning environments, where the larger the gap between students’ expectations and experiences is, the less the student participation. (p. 353)

As the K-12 students are the consumers of online course content, it is important that they have input into the design of courses and opportunities to provide feedback on the positives and negatives of online courses. In Florida, online courses are funded based on successful completions; districts can only claim funding when students successfully complete courses. Therefore, it is vital that the courses, along with the instruction, provide the student with every opportunity to succeed. Kuong’s 2009 research showed that students’ perceptions of a learning environment are positively related to their subsequent learning behavior and the quality of their learning outcomes.

The findings from Research Question 1 may guide the future practice of ABC Online Learning School and ABC School District by using students’ perceptions of quality course

design to make informed decisions regarding the online courses that are offered. The strategy would be to use student survey data along with current research and feedback from instructors to provide students with multiple options, from which to choose, in meeting their educational needs. Also, using the Research Question 1 data obtained from students, ABC Online Learning School can focus on quality course design factors and components within each factor to engage learners in the online learning experience. In future studies using this instrument, respondents should be asked to clarify the “I don’t know” response to better understand the reasons for choosing this response. In addition, “preparing students to be successful for the future requires a robust and flexible learning infrastructure capable of supporting new types of engagement and providing ubiquitous access to the technology tools that allow students to create, design, and explore” (U.S. Department of Education, 2017, p. 69).

The data from Research Question 2 is very important to the success of ABC Online Learning School and the virtual offerings of ABC School District. Understanding what students perceive as factors contributing to a quality online course and being able to relate that to course completions allows administrators to focus on those factors in an effort to increase the rates of successful course completions. According to Garrison et al., 2000, selecting content, setting the climate, and supporting interaction are three factors that need to be considered when designing a quality online course.

The analysis of the data obtained from Research Questions 3 and 4 may help ABC Online Learning School make better decisions regarding course offerings by evaluating the quality of the online course using the standards of online course design. The developer of the course is not as important as the quality of the course and the ability of the course to be used in various

situations to meet the needs of all students. The challenge for ABC Online Learning is to conduct a program evaluation and a cost-benefit analysis to ascertain the best solution(s) for the students and the district.

According to the Community of Inquiry (CoI) theoretic model, there are three distinct aspects that influence the online educational experience: cognitive presence, social presence and teaching presence. The results of this research study have supported the importance of all three through analyzing student perceptions of the online courses. The factors of quality online course design that were the focus of this study (course content, instructional design, student assessments, and technology infrastructure) impact students' overall experience. Although the findings regarding predicting successful course completions in relation to the descriptors of course developer and type of credit earned (original credit or credit retrieval/recovery) were insignificant, ABC Online Learning School can use these data to focus on other aspects of online learning. More specifically, as researchers such as Swan, Hynes, Miller, Godek, Childs, Coulombe-Quach, & Zhou (2013) have observed,

Online instructors all described two major factors, including being able to build a positive relationship with their students and being approachable. Others included a need for teachers to have "constant" communication and being available for student's questions, as well as for effectively collaborating with other teachers. (p. 437)

These factors influenced student successful completion rates according to Swan et al. (2013).

For ABC School District and ABC Online Learning, it is important to provide students with multiple avenues to complete the requirements to successfully progress through to graduation. The Department of Education (2017) asserted that;

Schools and colleges need to ensure students have access to a variety of high-quality digital learning materials and resources to support their learning. The ability to curate and share digital learning content is an important component of a robust infrastructure for learning. (p. 76)

Online learning affords students the opportunity to enroll in courses not offered on their campus, to work at their own pace and in their own space, to recover credits for courses that were not successfully completed, and to have choices on their educational journey. In addition, K-12 aims to prepare students for online learning environments later in life. Due to the continuing need and growth of K-12 online schools, all factors that support student success and achievement must be considered in the design, development and delivery of online courses (Gunter & Reeves, 2016).

APPENDIX A
INSTITUTIONAL REVIEW BOARD APPROVAL



University of
**Central
Florida**

University of Central Florida Institutional Review Board

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12201 Research Parkway, Suite 501

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Telephone: 407-823-2901 or 407-882-2276

www.research.ucf.edu/compliance/irb.html

From: **UCF Institutional Review Board #1**

FWA00000351, IRB00001138

To: **Jennifer S. Peterson** and Co-PI: **Dr. Glenda A. Gunter**

Date: **August 03, 2018**

Dear Researcher:

On 08/03/2018 the IRB approved the following human participant research until 08/02/2019

inclusive:

Type of UCF Initial Review Submission Form

Review: Expedited Review

Project Title: Factors that influence student completion and
achievement in online courses.

Investigator: Jennifer S. Peterson

IRB Number: SBE-18-14105

Funding

Agency:

Grant Title:

Research ID: N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>. If continuing review approval is not granted before the expiration date of 08/02/2019, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation.

Participants or their representatives must receive a copy of the consent form(s).

All data, including signed consent forms if applicable, must be retained and secured per protocol for a minimum of five years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained and secured per protocol.

Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

This letter is signed by:

Page 1 of 2

A handwritten signature in black ink, appearing to read "Gillian Morien". The signature is written in a cursive style with a prominent vertical stroke at the end.

Signature applied by Gillian Morien on 08/03/2018 03:57:15 PM EDT

Designated Reviewer

APPENDIX B
PERMISSIONS

SREB PERMISSION OF USE

TO: Jennifer Peterson

DATE: April 26, 2018

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BF

Bruce Friend <bfriend@inacol.org>



Reply all|

Today, 3:32 PM

Jennifer Peterson

Inbox

You replied on 4/27/2018 3:38 PM

Susy,

Thank you for reaching out to. The online course quality standards, along with all of our publications, are published under a Creative Commons license. As such you are welcome to utilize our resources in your work, and build off of them, as you wish, as long as appropriate recognition to iNACOL is given.

Congrats on your doctoral work. And Go Knights. I have my Masters in Education from UCF.

Warm Regards,

Bruce

Bruce Friend

Chief Operating Officer

[International Association for K12 Online Learning](#) (iNACOL)

bfriend@inacol.org

919-802-0832

Save the Date iNACOL

Symposium 2018 Nashville, TN:

October 21-24, 2018

<http://www.inacol.org/events/symposium>

From: Jennifer Peterson [<mailto:jspeters@Knights.ucf.edu>]

Sent: Wednesday, April 25, 2018 2:15 PM

To: Information <info@inacol.org>

Subject: Permission to use

Good Afternoon!

I am a student at the University of Central Florida and am pursuing my Doctorate of Education. My dissertation topic revolves around the relationship of student's (in grades 9-12) perception of the factors in the online course and course completion and achievement on end of course exams.

I have developed a student perception survey guided by the questions in the K-12 Standards for Online Course Design.

I am seeking permission to continue my research using the survey I have created.

Thank you for your consideration.

Susy Peterson

APPENDIX C
SURVEY INSTRUMENT

STUDENT SURVEY OF ONLINE COURSE DESIGN

This survey will be distributed to students in grades 8 -12 taking any online course with ABC Online Learning School.

Demographic Questions

1. Name:
2. Grade level: (choose one) 9, 10, 11, 12
3. Male or Female (circle one)
4. Grade Point Average (GPA):
5. Graduation Year:
6. Name of course:
7. Course taken for: Choose one (a.) original or first-time credit or (b) credit retrieval/credit recovery
8. Platform used (Choose one) Canvas, CyberActive, Odyssey/Compass, Apex, K12/FuelEd
9. Number of online courses taken this school year: _____ Lifetime: _____
10. Number of online courses taken and completed:
11. Where do you work on/complete your online course? Choose one (a.) at home, (b.) in a classroom, (c.) in a computer lab, or (d.) other – please specify where _____

Questions 12 – 42, answer based on your experience with your online course.

Question	Rubric that influenced question	Strongly Disagree	Disagree	Agree	Strongly Agree	Do not Know
A. Course Content						
12. The online course	iNACOL					

Question	Rubric that influenced question	Strongly Disagree	Disagree	Agree	Strongly Agree	Do not Know
expectations were easy to understand. I knew what I needed to do to be successful.	A1 SREB A1					
13. The learning activities relate to the learning objectives.	iNACOL A2 SREB A2					
14. Before the course begins, learning resources and materials are available that prepared me for the online course	INACOL A5 SREB A6					
15. Course requirements are clearly stated: student expectations, methods of communication, required materials, grading policy, time requirements, etc.	INACOL A6 SREB					
16. The instructor provides an introduction that clearly states availability and methods to contact.	INACOL A8 SREB A6					
17. Before the course begins, learning resources and materials are available that prepare the student for the online course.	INACOL A1 SREB A6					
B. Instructional Design						
18. The course instruction includes a variety of activities that are engaging or keep me interested.	INACOL B3 SREB B6					
19. The course is organized into units/modules and lessons that include learning objectives at the beginning of each.	INACOL B2 SREB B2					
20. Each unit and lesson include an overview that describes	INACOL B2					

Question	Rubric that influenced question	Strongly Disagree	Disagree	Agree	Strongly Agree	Do not Know
the objectives, activities, assignments, assessments, and resources.	SREB B2 & B3					
21. The course provides opportunities for appropriate instructor-student interaction including opportunities for timely and frequent feedback.	INACOL B8 SREB B13					
22. Students have access to resources that enrich the course content.	INACOL B11 SREB B16					
Student Assessment						
23. The types of assessments in the course measure the stated learning objectives.	INACOL C1 SREB C1					
24. Multiple methods of assessment (tests, projects, etc.) are provided to students to show mastery of content.	INACOL C2 SREB C2					
25. The course provided ongoing, varied, and frequent assessments that were conducted throughout the course.	INACOL C3 SREB C3					
26. Assessment strategies, tools, and feedback allowed me to be continuously aware of my progress.	INACOL C4 SREB C4					
27. I was offered choice in assignments. I could choose how to show what I know.	INACOL C2 SREB C2					
28. The grading policy and practices are easy to understand.	INACOL C7 SREB C7					
Technology Infrastructure						
29. The course is easy to	INACOL					

Question	Rubric that influenced question	Strongly Disagree	Disagree	Agree	Strongly Agree	Do not Know
navigate.	D3 SREB D3					
30. The course uses content specific tools and software appropriately (iXL, Microsoft Office, digital textbook, etc.)	INACOL D7 SREB D7					
31. Hardware, Web browser, and software requirements are specified.	INACOL D5 SREB D5					
32. Technologies required in the course are easily accessed (external links, digital textbook, etc.)	INACOL D10 SREB D11					
33. My course required me to link out to other sites.	INACOL D3 SREB D3					
34. The instructional materials (textbook, reading, activities, etc.) were easily accessible.	INACOL D3 SREB D3					
Other						
35. It is important to me that the course and instructor provide clear instructions regarding what is expected of me to be successful.						
36. It is important to me that the learning activities align with the stated objectives.						
37. It is important to me that I know what the objectives of each lesson and unit are and what activities/assessments will be used during the lesson/unit.						
38. It is important to me to have choice in assignments and in how I show what I know.						
39. It is important to me that it is						

Question	Rubric that influenced question	Strongly Disagree	Disagree	Agree	Strongly Agree	Do not Know
easy to navigate in the online course.						
40. It is important to me that the course and instructor provide clear instructions regarding instructor availability and methods to contact.						
41. I enjoyed this online course.						
42. I would take another online course.						

Open-Ended Questions (Qualitative)

43. List what you liked most about your online course.
44. List what you liked least about your online course.
45. List specific components of your online course that helped you to complete the course.
46. List specific components of your online course that were challenging.

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