

THE RELATIONSHIP BETWEEN INSTRUCTOR SELF-EFFICACY AND ONLINE  
COURSE SUCCESS RATES AT A COMMUNITY COLLEGE

by

Denise Sara Martin

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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## ABSTRACT

The purpose of this quantitative, non-experimental, predictive correlational study was to determine if an online instructor's perception of their own self-efficacy in student engagement, instructional strategies, classroom management, and use of computers could predict their online course success rate. As distance education continues to grow, administrators seek ways to improve students' learning experiences and success in online courses. One method of retaining students in programs is providing instructors the needed resources to support students as they progress through a course. The participants for the current study were faculty at a community college in North Carolina who taught an online course in fall of 2020. A sample of 65 instructors were surveyed using an instrument called the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale (MNESEOTS). Collected data were analyzed using multiple linear regression, which found no significant predictive relationships between instructor self-efficacy and any of the four measured areas of student success. While this contradicts some of the literature, recommendations for future research include additional studies with increased sample sizes at more institutions and expanded surveys targeting online and seated faculty to determine if a difference between the variables exists for each of those populations. Moreover, additional research should include comparisons of the variables against course success rates.

*Keywords:* course success rate, distance education, online learning, professional development, self-efficacy, student success

### **Dedication**

I dedicate this manuscript to my family. To my husband Matt, you have supported me this entire journey, through the tears and self-doubt, through the frustrations and writer's block, and through the writing marathons and late nights. You kept the kids occupied, you cooked dinner, you made runs to Starbucks, you brought me snacks. I am thankful for all the sacrifices you made so that I could complete this adventure. I would not have even started, much less finished this without your unfailing belief in me. To my daughters Maryann and Kristin, I hope that you can forgive the many weekends that I had to study instead of play. I am thankful for your sacrifice as well and I hope that I have shown by my example that you can do great things and that you are smarter and stronger than you think. I hope that someday you too will face your fears and do something you thought was impossible. Thank you. I love you.

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### **List of Abbreviations**

Classroom management (ClaMan)

Course Success Rate (SucRate)

Institutional Effectiveness and Research (IER)

Instructional Strategies (InsStr)

Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale (MNESEOTS)

Massively Online Open Course (MOOC)

Use of Computers (UseCom)

Statistical Package for Social Sciences (SPSS)

Student Engagement (StuEng)

## **CHAPTER ONE: INTRODUCTION**

### **Overview**

This section will provide an overview of instructor self-efficacy and course success rates and the background and importance of student success in online courses. The historical and social context and the relevant theoretical framework will be detailed, and a review of the related literature will be given. The problem statement, purpose statement, and the significance of this research will be addressed. Finally, the research questions and the variables for this research will be explained and terms used will be defined.

### **Background**

Enrollment at community colleges declines when the economy improves (Quinterno, 2019), and college enrollment has been declining for the last four years (Seaman et al., 2018). Typically, this is because more jobs are available and prospective students do not have the time to attend college, or there are more employment opportunities available, and workers do not need more education or enhanced skills to find better jobs. Unfortunately, when enrollment declines, so does the state funding that supports the college because funding is based on the number of enrolled students (Quinterno, 2019). A decrease in funding can adversely affect an institution by requiring administrators to look for areas to make up the loss, including eliminating programs, staff, and faculty layoffs, and increasing the cost of tuition (Guth, 2018). To avoid a decrease in funding, and to keep college enrollment increasing and campuses thriving, administrators often examine ways to reduce barriers to attrition (Harris et al., 2016), increase credential completion (Pierce, 2015), and increase student satisfaction (Bassi, 2019). This research will focus on two specific criteria that colleges might use to accomplish this goal—instructor self-efficacy and course success rate.

## **Self-efficacy**

Instructor self-efficacy is defined as the instructor's personal belief about themselves and how they use their skills in different situations (Bandura, 1997). Self-efficacy is also a judgment of capability (Hardy et al., 2017) which is typically self-reported and presumably irrespective of the individual's actual qualifications, education, or experience with the subject matter in question. If administrators could identify specific areas of low self-efficacy, this data could be used to create professional development opportunities and provide support and resources to faculty, and if successful, might impact attrition, completion, and student satisfaction.

Self-efficacy can be defined as an individual's own perceived ability, or confidence in their ability, to accomplish a goal or objective (Bandura, 1997). Thus, self-efficacy affects attitudes, which regulates how a person views their ability to use the various skills required to perform a specific task or how confident an individual is their belief that their own skills will apply to any problem, resulting in a favorable outcome (Kirsch, 1995). The perception of self-efficacy is typically not related to an individual's actual level of competence (Bandura, 1997). In particular, there seems to be a relationship between an individual's hesitance to use higher forms of technology and their level of perceived self-efficacy which may be a sign of that person's belief that they are unable to perform adequately, even if they possess the skills to do so (Yesilyurt et al., 2016).

## ***Efficacy in Student Engagement***

Faculty engagement with students is comprised of several factors, including facilitating an active learning environment, appropriate levels of academic rigor, and dynamic communication with students (Coates, 2007). Student engagement, specifically, interactivity between the instructor and student, requires effort and collaboration from both the instructor and

student (Gourlay, 2017). As such, online learning trades consistent, face-to-face engagement requiring little motivation on the part of the teacher and student, for increased motivation for learning by the student and access at a distance for the instructor; in other words, online learning places higher value on the shorter amount of time that instructors interact with his or her students (Warren & Robinson, 2018). Thus, instructors with a higher level of self-efficacy hold more responsibility for student learning outcomes and have a higher level of engagement with students (Fong et al., 2019). Additionally, research shows that higher self-efficacy results in higher job satisfaction, which results in higher engagement in the classroom (Granziera & Perera, 2019).

### ***Efficacy in Instructional Strategies***

It is well known that the instructor's own teaching ability in online and seated instructional strategies directly affect student learning and grade outcomes, but it is also the students' perception of the teacher's ability to use and manage the technology within the classroom that fosters both the teacher's growth and the students' individual learning experiences (Elstad & Christophersen, 2017). It is imperative, therefore, that the academic institution not only provide training in how to improve the teacher's instructional practices, but also that they build the teacher's personal motivation and inspiration in the use of those practices (Depaepe & Konig, 2018).

### ***Efficacy in Classroom Management***

Even the most prepared instructors can experience significant challenges in the classroom environment, no matter the instructional setting (Patterson & Seabrooks-Blackmoore, 2017). Problem students in any setting can disrupt an entire class, leading to poor academic performance in both the perpetrator, but also their classmates, who might be innocent bystanders. Online classrooms are no different and the preparation techniques institutions use to assist

instructors in managing their classrooms should be adapted to reflect the actual situation in which those techniques will be used (Beasley & Bernadowski, 2019). The training provided to the instructor by the institution should have a two-fold effect: Help the instructor master efficacy in their own classroom management, but also improve the students' motivation to master the material, both objectively and subjectively (Schiefele, 2017).

### ***Efficacy in Use of Computers***

It is almost obvious to make the case that for an instructor to be effective in a digital classroom, proficiency with technology, and the self-belief one's own proficiency is required. Academic institutions must empower online instructors with the knowledge, skills, and training to use them, long before that technology is used in their academic programs (Heath, 2017). This should be a holistic instructional system: Online instructors build their capacity to employ and integrate technology in multiple environments, while also strengthening their own ability to do so, both informally and formally as a part of an institutionally supported and participative training program (Barton & Dexter, 2019).

### **Historical Context**

Non-traditional education began the split from its seated counterparts in 1728 when the first correspondence course was sent through the mail (Kentnor, 2017) to the first distance-learning cohort. Wired communication revolutionized the academic environment, leading to the use of the internet for delivery of college courses. Online education has evolved significantly over the years, from the first online course taught in 1981 by Western Behavioral Sciences Institute's School of Management and Strategic Studies (Harasim, 2000). Currently, 49% of all students are enrolled exclusively in an online program at for-profit institutions, 19% in online programs at private, non-profit institutions, and 11% of students in online programs at public

institutions (Ginder et al., 2019). In 2017, 1,007,367 (63.98%) students at a community college in North Carolina took at least one online course (NC Community College System, 2018).

Online education is no longer an oddity, it is quickly becoming normalized and may one day replace the seated program as the preferred method of delivery.

Online education is a vital component of a community college because many students need to take online classes to have flexibility in their daily schedule when balancing family and employment obligations (Ashburn, 2006). In addition, online classes can provide access for students who do not have reliable transportation or who do not live close to a college (Finnegan, 2019). In response to this need, the community college must offer an online education experience for the student that is comparable with the experience that the student would receive in the classroom (Gregory & Lampley, 2016). Because the community need for flexible classes is so great, administrators are looking for ways to increase student success to help students earn their desired credential in online courses.

### **Social Context**

Whether through the active transmission of knowledge or the spreading of social justice, higher education serves even the portion of the population that might not engage in post-secondary learning (Williams, 2016). However, higher education serves the public interest most effectively when those invested in learning are both engaged with academics and continue the learning process, even after the formal portion is complete, leading to increased social inclusion and active citizenship (Ates & Alsai, 2012). Higher education is directly tied to improved quality of life, increased salary, and stronger local economies, thus making improved retention a noble goal for local, state, and regional educational institutions (Stuart et al., 2014). Therefore, it serves

the public interest for colleges to make their best effort to improve the educational environment so that avoidable failures and the subsequent attrition is prevented (Williams, 2016).

A student's failure can create a cascading effect as the risk of recurring failure discourages the student from either trying again with the same program or even attempting a new program (Poellhuber et al., 2008). Student failure can also be an indication of failure on the part of the college in their effort to inculcate students into a culture of learning and academics (Lee & Choi, 2011). While there are many factors such as a student's extra-curricular activities, his or her family responsibilities, or job obligations that the institution cannot control (Castles, 2004; Perry et al., 2008) the institution can both offer limited assistance to help the student manage those factors and can work to increase student satisfaction in various ways. This assistance might include tutoring, training (Müller, 2008), and academic advising (Ivankova & Stick, 2007).

Improving, maintaining, and enhancing student success, therefore, is in the best interest of not only the student, but the college, the local community, and even society as a whole (Ates & Alsal, 2012; Stuart et al., 2014; Williams, 2016). While earning grades good enough to succeed in an academic program is ultimately the student's responsibility, the institution should put forth its best effort to create an environment in which the student has the best chance to accomplish his or her educational goals by fostering the student's own sense of self-efficacy (Doménech-Betoret et al., 2017), as well as their extra-curricular activities, his or her family responsibilities, and their job obligations. This includes hiring the most qualified individuals to teach and providing the resources and training to the instructors to increase their effectiveness in their classrooms.

## **Theoretical Framework**

The overarching concept of this research is student success, as it relates to instructor self-efficacy and course success rates. The framework supporting this concept is the interrelation between the five pillars of online learning and Knowles' theory of adult learning (Knowles M. S., 1978). The five pillars of online learning are learning effectiveness, cost effectiveness, access, student satisfaction, and faculty satisfaction. These five pillars describe the supports that comprise an online learning program and also how they relate to the stakeholders within its influence, such as faculty, instructors, and students (Online Learning Consortium, 2002). In most post-secondary, online learning environments, the students are adults, who have different learning mechanisms and needs than children. According to Knowles' adult learning theory, adult learners are more self-directed than children but also require support from the academic institution to continue to function as self-directed learners (Merriam, 2001).

Online education certainly supports self-directed learning, and the concept seems tailor-made for adults, but the institution must also ensure that these adult students have the support necessary to expand their own ability to learn and ensure successful completion of their credentials. Knowles established the theory of adult learners in 1978, and the concept of the five pillars of online learning has added to that theoretical base by integrating new concepts that were (Chang et al., 2011; Petit dit Dariel et al., 2013; Sword, 2012) established with online learning to what is known about adult learners. The two theories have an important interrelation because one without the other would provide an incomplete theoretical foundation for today's online adult learners.

According to the five pillars of online learning, a significant factor in improving student success in online programs is the perceived equivalence between online programs and their

traditional counterparts (Online Learning Consortium, 2002). Despite many online programs being accredited or even being modeled after traditional, seated programs in reputable educational institutions, “online college” still retains a stigma of being sub-par with or unequal to traditional programs, primarily when the online program is not hosted by an established, recognized, educational institution (Christensen & Eyring, 2011). To counter this, educational institutions should strive to ensure that their online programs are equal in rigor, quality, and outcomes to their seated programs (Stack, 2015).

Both student and faculty satisfaction are necessary to enhance the online experience and improve student success. These two constructs create a feedback loop between each other, with each influencing the other (Gray & DiLoreto, 2016). Faculty satisfaction will likely be at its highest when they are involved in the development and governance of their programs and are given the tools to best manage those programs, such as enhanced training and adequate technical support (Online Learning Consortium, 2002). Student success follows, as properly trained and empowered instructors will likely have a higher self-efficacy and therefore a higher quality of interaction with the students, engaging them with timely information using current technology that is reinforced by competent technical and administrative support services (Althausser, 2015).

Adult students, while more self-directed learners than children, still require a significant level of educational support (Park & Choi, 2009). This support includes adequate rigor, apparent value, and robust access to interesting and varied academic programs. Adult learners are likely employed and require the highest benefit at the lowest cost, which includes both time and money (Rogers, 2018). To be self-directed also means that students and instructors both have the technical and administrative support necessary to create an environment where engagement is a priority but is also natural and enriching (Jones, 2013). This supported engagement contributes to

the learning capacity of online, self-directed students, potentially increasing student satisfaction, leading to student success, and successful completion of a credential. Improving instructors' self-efficacy is part of this supported engagement, as student engagement is a significant factor in teacher self-efficacy (Shaukat & Iqbal, 2012).

### **Problem Statement**

The relationship between student success rates in community college courses and teacher self-efficacy is not well defined in the literature as most research on this subject has been done at the university level (Muljana & Luo, 2019). There is literature that addresses low course success rates in the community college setting (Corry & Stella, 2018; Hardy et al., 2017; Vayre & Vonthron, 2016), but the reasons vary, and none of literature specifically attributes teacher self-efficacy as a factor. Additional literature discusses preparedness and organizational support as factors in self-efficacy (Thomas et.al., 2019; Vang et al., 2020) but do not connect those factors directly with student success or course pass rates. The skills required of teachers to teach students effectively in an online, asynchronous environment are becoming more important than ever, and there is a relationship between an individual's comfort with technology and their perceived self-efficacy (Barton & Dexter, 2019). Nonetheless, these variables have not been studied at the community college level, despite the high adoption rate of distance and online learning by community colleges (Yesilyurt et al., 2016). The literature gap is evident when examining how those these various elements—self-efficacy, preparedness, organizational support, etc.—relate to the overall concept, their impact on course success rates, and their usefulness in community colleges (Zee & Koomen, 2016). A further limitation in research exists because self-efficacy is measured with a variety of different instruments, each focusing on different aspects and outcomes (Zee & Koomen, 2016). Thus, the numerous measures generate

varying or contradictory results, and none of those results have been used to address how teacher self-efficacy, irrespective of how it is measured or defined, could be a factor in student and course success rates. This gap in research poses a problem for community colleges, as community college course success rates are a significant factor in student retention, which in turn determines future state and local funding, in addition to contributing higher quality graduates to the workforce (Quinterno, 2019). The problem is that the literature has not fully addressed the relationship between course success rates and instructor self-efficacy at the community college level (Vang et al., 2020).

### **Purpose Statement**

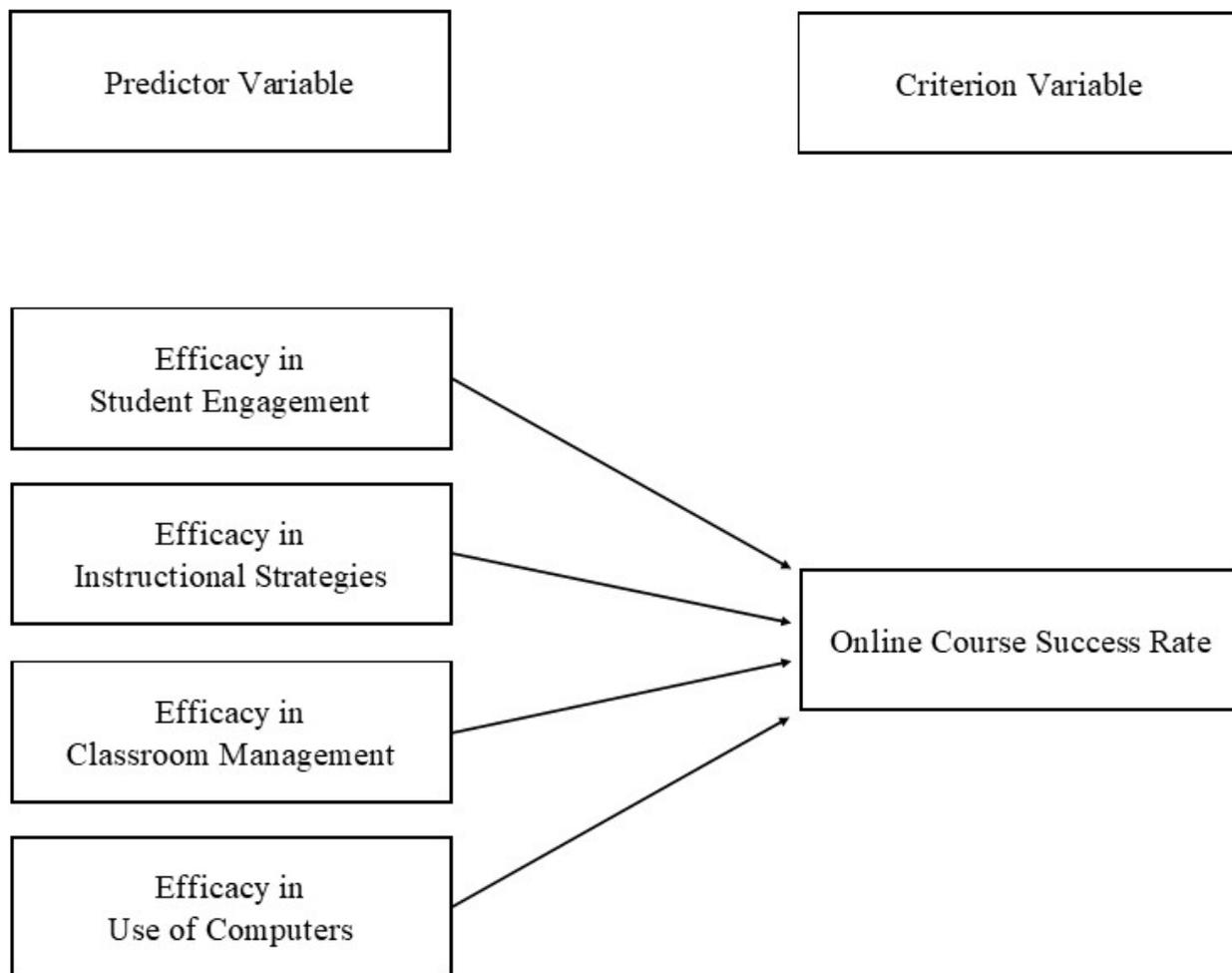
The purpose of this quantitative, predictive correlational study is to determine to what extent an instructor's perception of their own self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor can predict their online course success rate. This research will examine four predictor variables to determine if there is a correlation to course success rates. These variables are instructor self-efficacy in student engagement, instructor self-efficacy in instructional strategies, instructor self-efficacy in classroom management, and instructor self-efficacy in the use of computers. The definition of these variables is:

- *Student Engagement* – Engagement with students is comprised of several factors, including facilitating an active learning environment, appropriate levels of academic rigor, and dynamic communication with students (Coates, 2007).
- *Instructional Strategies* – A process to employ educational tactics and goals designed to elicit specific behavior in learners, using structure and goals that will accomplish the desired strategy. (Sangwan, 2019).

- *Classroom Management* – The management of student behaviors and organization of the classroom are primary concerns for educators. These skills are demonstrated through the formation of daily routines, which save time and promote good order within the classroom. These elements of classroom management are necessary if the educator expects the students to have positive learning experiences and meet the overall learning outcomes as defined by academic program (Rawlings Lester et al., 2017).
- *Use of Computers* – The use of computers falls into three elements: Basic skills, informational, and learning. Basic skills are a demonstration of students' information technology knowledge; the use of computers as an informational tool is a gauge of how well the student can use technology to research; and, finally, the use of computers as a learning tool is a demonstration of students' ability to practice their knowledge and skills (Tondeur et al., 2008).

These variables will be measured by a survey by which faculty will assess their self-efficacy in these areas. The criterion variable is online course success rates, which is calculated by dividing the number of students who complete a course with a grade of A, B, or C by the number of students who start the course (Bishop et al., 2018). This variable will be measured by looking at the course success rate of the courses taught by faculty at a community college who teach online courses. The researcher will then look at the relationship between the instructor's self-efficacy and the course success rate to determine what the correlation is between how an instructor feels about their efficacy and if it has an impact on online course success rates.

Figure 1 shows a visual representation of the variables:

**Figure 1***Predictor and Criterion Variables***Significance of the Study**

This study is significant because student success ultimately contributes to the public benefit that higher education provides and, traditionally, teacher self-efficacy is a factor in student success in seated programs. Additionally, the literature concerning distance education and teacher self-efficacy is limited, even as online learning continues to advance as students' format of choice throughout both the United States and the world (Ginder et al., 2019). As more traditional colleges adopt the online learning format, it only makes sense that those learning institutions would attempt to adapt their faculty training programs to improve academic

outcomes to achieve similar or better levels than as seen with traditional programs. This study will contribute to the existing body of knowledge by providing empirical depth to the understanding of student success in online learning environments, especially in the realm of community colleges. This contribution could promote additional research into other avenues of student success and might provide further assistance to educational institutions seeking to improve their instructors' self-efficacy.

A theoretical significance is the fact that this study addresses a relatively unknown and not well-understood phenomenon in the classroom. There is a potential disparity between an instructor's perception of his or her self-efficacy and the course success rates in online classes. As previously mentioned, there is very little, if any, research with these two concepts studied in intersection. A better understanding of this intersection could help students understand the new evolving environment that is distance education, reduce student stress and confusion, and potentially increase their academic success (Martin J. M., 2017). Ultimately, this study has practical significance because it reinforces the concept of higher education is beneficial for the public good, contributing to students' overall benefit to society through their critical thinking skills, taking responsibility for their actions, and achievement of intrinsically motivated goals (O' Shea et al., 2015).

### **Research Question**

**RQ1:** How accurately can an online instructor's online course success rate be predicted from a linear combination of their academic self-efficacy factors?

### **Definitions**

1. *Classroom Management* – The management of student behaviors and organization of the classroom are primary concerns for educators. These skills are demonstrated through the

formation of daily routines, which save time and promote good order within the classroom. These elements of classroom management are necessary if the educator expects the students to have positive learning experiences and meet the overall learning outcomes as defined by academic program (Rawlings Lester et al., 2017).

2. *Distance Education* – A learning environment in which the student(s) and teacher(s) are not in the same location. Typically, distance education uses technology, with the internet currently being the primary vehicle, but correspondence through the mail has been a popular method and was even the main method until the advent of the internet (Kentnor, 2017).
3. *Instructional Strategies* – A process to employ educational tactics and goals designed to elicit specific behavior in learners, using structure and goals that will accomplish the desired strategy. (Sangwan, 2019).
4. *Online Learning* – a form of distance education that allows both synchronous and asynchronous delivery of course content, provides students with additional flexibility regarding understanding the subject matter, and requires higher levels of self-motivation by the student to learn the material (Perry & Pilati, 2011).
5. *Professional Development* – Performance improvement strategy designed to create positive change in competence, and includes any activity, formal and informal, to include reading professional articles and attending workshops or conferences (Borg, 2018).
6. *Self-Efficacy* – the personal belief about oneself and how one uses the skills one possesses under various conditions (Bandura, 1997).

7. *Student Engagement* – Engagement with students is comprised of several factors, including facilitating an active learning environment, appropriate levels of academic rigor, and dynamic communication with students (Coates, 2007).
8. *Student Success* – a successful student possesses many common characteristics, such as time management ability and critical thinking skills (Gregory & Lampley, 2016). Student success from an academic institution’s point of view, however, could have many definitions as determined by the institution itself. Commonly, student success is defined by forward progress toward completion of the degree program, graduate school admission test scores, and the rate of transfer from a two-year institution to a four-year institution (Kuh et al., 2006).
9. *Use of Computers* – The use of computers falls into three elements: Basic skills, informational, and learning. Basic skills are a demonstration of students’ information technology knowledge; the use of computers as an informational tool is a gauge of how well the student can use technology to research; and, finally, the use of computers as a learning tool is a demonstration of students’ ability to practice their knowledge and skills (Tondeur et al., 2008).

## **CHAPTER TWO: LITERATURE REVIEW**

### **Overview**

This section will provide a detailed review of the theoretical framework of Knowles' theory of adult learning and the five pillars of online learning along with its significance to this research. A comprehensive review of the literature pertaining to adult learners, online education course success rates, student success, instructor self-efficacy, and faculty professional development will be given. Finally, a conclusion will be made which summarizes all the information given and shows why the selected literature is pertinent to this research.

### **Theoretical Framework**

It is important to understand the relevant theoretical framework that supports a research project. This framework establishes the relationship between the constructs on which this research is based. In this case, Knowles' theory of adult learning posits that adults learn by experience, which is better understood through andragogy and through self-directed learning. These constructs are then viewed through the paradigm of the five pillars of online learning, with the result being an effective adult education program.

### **Knowles' Theory of Adult Learning**

The theory of adult learning was first published by Malcolm Knowles in 1968, where he developed this concept based on his insight that adults as learners needed to be treated as adults, as self-directed people, and with respect (Knowles, 1968). Knowles noted that for adult learners, the focus needed to be on teaching techniques which make use of the learner's experience, such as simulation, labs, case studies, and discussions rather than the traditional lecture, reading, and presentations. Specific reference was made regarding action learning and participative learning and that adult learning should be problem-centered, allowing adult students to identify what they

are curious about and creating a curriculum around those curiosities in a student-centered manner. It was Knowles' work on adult learning that set the stage for two theories, andragogy and self-directed learning, to emerge and begin to transform adult education experiences.

### *Andragogy*

The concept of andragogy is first attributed to Alexander Kapp who introduced this concept in Europe in 1833 in which he referenced the educational philosophies of Plato (Loeng, 2017). The concept was then introduced to the United States by Malcolm Knowles in which he defined andragogy as “the art and science of helping adults to learn” (Knowles, 1968, p. 351), which was a distinguishment from pedagogy, which he defined as “the art and science of teaching children” (Knowles, 1968, p. 351). Andragogy is focused on the unique needs and motivations of adult learners, which are very different from those of children, requiring educators to view the process of educating adults differently.

Over the years, there has been some debate as to whether or not this is an actual theory or just a technique or best practice (Hartree, 1984; Davenport & Davenport, 1985; Pratt, 1993). Critics have also been concerned that this theory lacks the proper empirical basis (Jarvis, 1984; Davenport, 1987). However, current literature on andragogy includes its ability to be applied to any field that serves adult learners (Sato et al., 2017), the value of extrinsic motivation (Youde, 2018), and positive learning outcomes (Remenick & Goralnik, 2019).

Merriam (2001) summarized five assumptions which underly andragogy regarding adult learners based on Knowles' theory. The adult learner:

- (1) has an independent self-concept and who can direct his or her own learning,
- (2) has accumulated a reservoir of life experiences that is a rich resource for learning,
- (3) has learning needs closely related to changing social roles,
- (4) is problem-centered and

interested in immediate application of knowledge, and (5) is motivated to learn by internal rather than external factors. (p. 5)

It was from these assumptions that Knowles based his recommendations for implementing adult learning programs. Whether theory or just a best practice, these assumptions formed the foundation of what we know about adult learners, and is still relevant and applicable today.

### ***Self-directed Learning***

The concept was introduced in North America by Malcolm Knowles. He defined self-directed learning as “a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes” (Knowles, 1975, p. 18). Knowles’ work is based on what was started by Houle (1961) and Tough (1967, 1971) in Canada, and this concept became the foundation of understanding adult learning.

Current review on literature regarding self-directed learning reveals that it reinforces self-management skills and goal setting (Khat, 2017; van Wyk, 2017), builds life-long learning tendencies (Tekkol & Demirel, 2018; Rascón-Hernán et.al., 2019), is a fundamental competence for adult life (Morris, 2019), and it is applicable to a variety of different educational formats (Van Woezik et al., 2019). However, critics of self-directed learning say that students with disabilities may struggle with this concept (van Garderen et al., 2017), that the focus on the individual learner leaves students unprepared to navigate collective social issues (Servant-Miklos & Noordegraaf-Eelens, 2019), and that it lacks complete consensus to the actual meaning of the concept (van der Walt, 2019). Additionally, one study found that adults were conditioned to be dependent on their teachers, in contrast of the theory (Katsara & De Witte, 2019). Critiques such

as these are uncommon, though, with the prevalence of the literature reaching consensus on the value of self-directed learning.

One study that seems key in the research of self-directed learning explored the concept of Open Space Learning. This format is an unstructured educational environment in which students decide what details to learn about a predetermined course or topic within that course, and then divided into groups with similar interests to teach each other the fundamentals of the chosen area within the confines of those topical groups. This is a forward-thinking approach to self-directed learning and an approach that relies almost completely on the student's ability to organize his or her thoughts about the information and then structure those thoughts into a coherent learning process (Van Woezik et al., 2019).

The study incorporated the experiences of 24 students participating in the open space learning experiment, 131 total students in the class, all of whom were in their sophomore year of college. All students in the study had the traditional, structured coursework available to them. Initially, the study groups merely copied the traditional course, but as they became more comfortable with the material, they changed tactics and techniques to better reflect the culture of the individual groups. In the end, on the final exam, the self-directed groups scored an insignificantly lower score on the exam than did those in the traditional classroom, meaning the self-directed style of learning was almost identical in outcomes to the seated program (Van Woezik, et. Al, 2019).

### **Five Pillars of Online Learning**

The Alfred P. Sloan Foundation's Sloan Consortium developed the Five Pillars of Online Learning in the late 1990's, as online education was just beginning to be recognized. The five pillars consist of learning effectiveness, cost effectiveness, access, student satisfaction, and

faculty satisfaction. The framework was established to measure and improve online educational programs (Online Learning Consortium, 2002). Even though online learning has evolved significantly since the framework's development, these concepts are still appropriate in today's educational environment.

### ***Learning Effectiveness***

Learning effectiveness means ensuring that the quality of instruction in online classes is at least as good as instruction in other formats (Online Learning Consortium, 2002). There are many factors that influence learning effectiveness, such as the personal motivation of the student, the climate of the classroom, the teaching methods used, and the level of the course (Comer et al., 2015). Interaction with students is an important component in an online learning environment because it encourages collaboration and enhances learning outcomes (Shukor et al., 2015; Sun et al., 2017) as well as increases the level of student engagement in an online course (Moradi et al., 2018). It is also important to understand what motivates a student to learn, both intrinsically and extrinsically as those motivations impact the student's success (Anthony Jr et al., 2019; Zaccone & Pedrini, 2019). Finally, for learning to be effective, a student's interest in learning must be cultivated so that participation in their own learning is increased (Ma et al., 2017).

One area that is receiving attention regarding digital learning effectiveness is in educational games. The use of games in the classroom can assist instructors in gauging how well students understand the material while students with differing abilities are able to learn at an individual pace (Callaghan et al., 2018). Also referred to as gamification, it "reflects a social phenomenon arising with a generation of digitally literate people" (Alsawaier, 2019, p. 373). When used in an academic setting, gamification can increase learning effectiveness by increasing student motivation to complete assignments, fostering engagement with the instructor, and

allowing students to develop critical thinking skills (Alsawaier, 2019). However, while the use of gamification can enhance learning objectives in short-term assignments, games can lose their novelty when overused in the digital classroom so they should be used judiciously and to achieve a specific learning outcome (Sanchez et al., 2020).

In a study that tested the efficacy of online, interactive learning tools, researchers surveyed 215 students, and of those, obtained 197 valid responses. The study was majority women (53%) and about 73% of the surveyed population was between 21 and 30 years old. About 76% of the respondents were employed, either part time or full time. The researchers used a Likert scale survey to measure the respondents' satisfaction with a type of online learning management system called LearnSmart (Sun et al., 2017).

The researchers found that the online learning software encouraged learning and increased the students' perception of their own competence. They also found that in a lot of ways, an online learning tool was more adaptable than a human instructor, thus providing more challenge to the students, encouraging them to learn more and study more diligently. One critique of this research, however, is the software itself, as it was proprietary and thus the results of this research might not be extrapolatable to other populations or other users of different types of software, depending on its specific characteristics (Sun et al., 2017).

A particular theme arises in the literature when attempting to understand the effectiveness of online learning versus in-classroom learning. That theme is the intrinsic motivation of the student, particularly the specific behaviors of the student attempting the learning (Ma et al., 2017). In a couple studies (Moradi et al., 2018; Shukor et al., 2015) the students' ability to control how they learned increased their motivation to learn, generating higher test scores, which is a correlative outcome of increased learning.

### *Cost Effectiveness*

Cost effectiveness is defined as offering improved services at a lower cost (Online Learning Consortium, 2002). Cost effectiveness analysis, while very common in the business world, is rarely used in education. However, it can be very useful in determining if one intervention will be more effective than another, such as comparing a new instructional strategy versus a reduction in class size (Levin & Belfield, 2015). Not only can a cost effectiveness analysis determine if the intervention will be successful, but it can also help determine if the cost of the new intervention will justify its expense (Tolsgaard et.al., 2015; Aitken, 2016). This data is useful in maximizing resources in academic environments where resources are limited.

Digital learning can be considered cost effective on many different levels. An online class, once created, can be taught numerous times in an online setting, to potentially hundreds of students versus dozens of students as in a traditional classroom (Nguyen, 2015). Another important consideration is comparing the cost of a traditional student to an online student. One study found that when students are combined, as in an online course, rather than taught in small groups, the cost savings is between 36-57%, due in large part to the savings in the cost of staffing (Bowen et al., 2012). Additional savings for online courses include the fixed costs of using classroom and lab spaces on campus, such as heating, cooling, cleaning, security (Bowen, et. al, 2012).

A common theme found in the body of research concerning the cost effectiveness of online learning versus traditional, seated learning is a focus on learning institutions finding ways to cut costs without sacrificing quality. For instance, Cheslock et al., (2016) found that a learning institution changing the composition of its faculty and instructional personnel and then incorporating various technologies to engage students would likely produce the desired results.

Other research, in keeping with the theme of cost effectiveness of online learning, noted that experiential learning, as possible through the online medium, tended to provide increased student learning rates and success (Meyer, 2014; Walker, 2019).

### *Access*

Access is defined as all students who wish to learn online have a wide variety of courses (Online Learning Consortium, 2002). As students become more connected to the internet and use their personal technology for education, online learning will continue to increase in popularity and schools will need to make their courses more accessible to these students (Ragusa & Crampton, 2017). The use of mobile technology such as laptops, tablets, and cell phones has increased student access by giving them the flexibility of utilizing learning technologies when it is convenient for them (Padmo et al., 2019). The most effective method of ensuring access to online learning, however, continues to be a high level of support from learning institutions, which are highly instrumental in increasing students' confidence level with online tools through the development of the skills to use them (King & Boyatt, 2015).

A mixed methods study in the British Journal of Educational Technology found that while online education "pluralized" higher education (Ragusa & Crampton, 2017), the biggest problem with online education was students' perception of it. This study found that while 78% of the 289 participants considered online education to be roughly equivalent to traditional, seated education, a common theme in the responses was that employers have mixed reactions to online degrees. However, a critique of this finding is that the actual responses from employers toward the online degree could not be validated with respect to the respondents' feeling toward employers and their acceptance of the online degree. In other words, it is impossible to know if the online degree was the reason for the potential employer's rejection of the application, or if it

was a different characteristic of the applicant and the employer merely used the online degree as a scapegoat.

The overall theme in the literature, however, is that online learning is beneficial for both student outcomes and the availability of education to those who might not have access to seated instruction. This is especially true for specialized degrees (Maas, 2017) and members of any population not near a metropolitan area (Mehmood et al., 2016). The biggest draw for online learning seems to be how many students can access it, irrespective of the quality of education received.

With regards to access, accessibility must also be considered, which is the ability for any student, irrespective of their disability, to have the same educational experience as that of their non-disabled classmates (Rehabilitation Act of 1973). This is mandated by federal law and enforced by the U.S. Department of Education, Office of Civil Rights. Institutions have struggled with implementing accessibility in online courses, specifically for students with vision or hearing impairments (Huss & Eastep, 2016). Institutions need to ensure that any technology component that students see or hear is accessible, including every part of its website, and every area within the Learning Management System that students use for online classes (Shaheen & Watulak, 2019).

Online learning is especially helpful for simulating realistic educational environments when on-site training with physical instruments or hands-on training is not available. A study by Alfred et al., (2016) found that, while technical instruction with physical objects was superior in many ways, simulated training in an online environment provided nearly equivalent value to participants. This study found that virtually the only variables affecting learning outcomes were

the students' desire to learn and cognitive ability. The 44 students who participated had nearly the same level of learning outcomes in the online class as those in seated, traditional classrooms.

Before any programming on any online learning management system is started, the institution making the conversion to online learning must ask itself if their courseware is accessible by students with considerable impairments. This could range from technology deficits to connectivity issues, but another aspect the school must consider is if and how a school can address accessibility to students who have disabilities. While online learning does improve the chances of the disabled receiving education quality similar to their able-bodied peers, the fact that a school merely has an online program might not mean it has adapted that program for those with disabilities. Shaheen and Watulak (2019) directly address this in their review of the literature pertaining to this topic.

This review discusses how specific disabilities can be compensated for through the use of the technology and how that technology should be developed with the assistance of people who would use it (Hashey & Stahl, 2014). Additionally, though various technologies exist to assist the disabled, that does not mean every disability is addressed through technology and its implementation into the digital learning environment. While this review addressed accessibility for the disabled in grades Kindergarten through high school senior, the tools, tactics, and technologies should certainly be applied in higher education for adult learners.

While most of the literature tends to praise online learning as a way to equalize and pluralize education for those with disabilities or the inability to attend traditional, seated class, a common theme found in several studies is the lack of personalization of education. For instance, several studies found that online learning did not provide educational support much improved from traditional learning (Bowen et al., 2012; Cheng & Chau, 2016; van Rensburg, 2019). While

this will certainly improve over time and with improvements in technology, for now, online learning does fall behind traditional, seated learning in some ways, particularly with immediate or direct support.

One study that stood out in the literature was Huss and Estep's (2016) research into how well-versed teachers and faculty are with regulations pertaining to the American Disabilities Act and the Workforce Rehabilitation Act as they relate to online accessibility of their institution's courseware. This seems to be an important factor in how well the courseware could be converted from the seated programs into the online programs and not completely understanding compliance and accommodation procedures encoded in US law could bring unwanted scrutiny and legal action against the institution. This is after considering the moral questions inherent in failing to accommodate courseware for a person with a disability.

The researchers surveyed 92 faculty members of a mid-sized, suburban university, using a 14-choice instrument that measured the participants' knowledge of civil rights laws pertaining to persons with disabilities and how those regulations are being considered by their university. The results are discouraging, as nearly three quarters of the participants were unaware of even built-in features of popular text-based software, such as Word and Adobe, that compensated for the visually impaired. Of those who knew of those features' existence, the majority had never used those accommodations and did not know how to do so. Similar results were discovered for faculty's knowledge of accessibility for the hearing impaired. Many of the qualitative responses noted that the teachers felt it was the administration's responsibility to make such accommodations, rather than the individual instructor's responsibility.

### *Accessibility and Learning Outcomes*

A criticism of the online learning environment versus hands-on, seated programs is the view that technical training is less effective online than it can be face-to-face in a classroom (Zacharia & Olympiou, 2011). Irrespective of the validity of that view, learning accessibility is a vital part of learning outcomes and online course instruction is recognized as a venue to increase technical proficiency, often to the same level as seated instruction (Zacharia, 2007). This aspect of online learning, proficiency equivalence or learning outcomes, is well studied.

In a study designed specifically to test the efficacy of online learning environments compared to physical learning environments, researchers examined multiple student characteristics against the two types of learning environments and reported the outcomes. The study included 48 participants with no recent experience or education in the building of circuit boards, all of whom were students at the same university (Clemson) and recruited through various social means, such as email, flyers, and word of mouth. More than half were women (62.5%) and only about one-third were engineering students (Alfred et al., 2018).

The researchers found that the online accessibility of the learning environment did generate effectiveness in learning the material, but the students in the physical environment learned faster and were more accurate in their learned tasks. This was not found to be a detriment to the effectiveness of the online environment, but a way to understand how to improve the online learning environment to increase its effectiveness relative to a physical learning environment. One of the limitations of this study, however, is that all the participants were traditional college students, and the sample size was low. Future studies should include a higher sample of adult learners and a larger cohort (Alfred et al., 2018).

There is a considerable amount of research devoted to determining how to best increase accessibility to students who cannot attend physical classrooms, while at the same time ensuring learning outcomes are as close as possible to those same physical classroom environments. A main theme in the literature, however, is not related to the actual learning outcomes, but equality of accessibility, overcoming the skill deficit of computer literacy or defeating the many challenges of internet connectivity (Barnard-Ashton et al., 2017; van Rensburg, 2018; Greal, 2015;) or physical limitations that might hinder learning, irrespective of instruction quality or internet connectivity (Ryan, 2016). These basic problems seem to be the biggest obstacle to the implementation of online courses for schools who are incorporating technology in their instruction for the sake of doing so, rather than for the benefit of increased learning outcomes (Rose, 2018).

### ***Student Satisfaction***

Student satisfaction is defined as when students are pleased with their online learning experience (Online Learning Consortium, 2002). Another definition is when a student's expectations are exceeded by repeated experiences (Elliott & Shin, 2002). Student satisfaction is a metric that administrators observe closely, as there are many different factors that affect a student's learning experience, as measured by their level of satisfaction. Students emphasized the desired to be entertained (Bornschlegl & Cashman, 2019) and to have social interaction with their classmates (Cheng & Chau, 2016; Nortvig et al., 2018; Alqurashi, 2019). Students who are satisfied with their learning experience will also receive a higher quality of knowledge and improved learning outcomes (Waheed et al., 2016). Finally, students who are satisfied with their learning experience have a higher retention rate (Braun & Zolfagharian, 2016).

An important component of student satisfaction is the prevalent use of social media for students to voice their satisfaction, or complaints, which could have a positive, or negative, impact on public image of the institution (Koshkin et al., 2017). In some markets where competition is high, such as popular online programs, institutions need to view students as customers in terms of how they are treated and to ensure they are satisfied with the services they receive, and if they are not satisfied, allow them to voice their concerns privately, and not publicly (Allen & Withey, 2017). This will in turn make the student feel heard and protect the public image of the college from unnecessary bad publicity.

A groundbreaking study conducted in 2016 found a direct relationship between the never-before-measured variable of “student propensity to participate” and satisfaction with the online course (Braun & Zolfagharian, 2016). This study, which surveyed 89 undergraduates, of which 91% were Hispanic and about 64% male, found that students with higher propensity to participate in online learning attributed success in their courses to their own level of participation in academic advising, which directly contributed to their satisfaction with the institution and their own learning outcomes. While this study is the first of its kind to measure these variables together, the oversampling of males and Hispanics might not make this study generalizable to other populations.

Multiple studies in the body of literature show that student satisfaction is directly related to the students’ own confidence in their ability to succeed in the class, their competence with the software used by the institution, and the quality of knowledge gained by the student during the course (Alqurashi, 2019; Waheed et al., 2016; Cheng & Chau, 2016). The common theme found in the literature, then, is not student satisfaction itself, but what the antecedents to student satisfaction are and how they can be identified. This an interesting finding, considering the

purpose of this study is an attempt to determine the relationship between instructor self-efficacy and student success.

### ***Faculty Satisfaction***

Faculty satisfaction is defined as when faculty are pleased with their online teaching experience (Online Learning Consortium, 2002). With 70.8% of institutions reporting that online education is critical to their long-term strategy (Allen & Seaman, 2015), administrators must look at the impact of online teaching on faculty. Some of the factors that influence a faculty's sense of satisfaction include the need to feel supported to teach online, both with administrative support and technical support (Howe et al., 2018; Luongo, 2018) as well as a good work-life balance (Denson et al., 2018).

With regards to teaching online, faculty are also concerned with receiving ongoing training for online teaching technologies (Wingo et al., 2017) and that they are compensated fairly (Cerci & Dumludag, 2019; Webber, 2019). A faculty's attitude and confidence about their ability to teach effectively in an online environment affects their perception of online learning, and therefore their satisfaction with both their own performance and with the institution for which they work (Martin et al., 2019; Perry & Steck, 2019).

The most common theme found in the body of literature concerning instructor and faculty satisfaction is that of the flexibility of online education. Online instructors are not confined to a classroom, not bound to a strict schedule, and viewed the addition of technology to their teaching repertoire as welcome (Shea, 2007; Green et al., 2009; Chapman, 2011; Wingo et al., 2017). Surely, then, this theme of faculty satisfaction could contribute to a more productive learning environment and, potentially, increased instructor self-efficacy.

As more traditional learning institutions change their courseware to support online instruction, instructors that once taught face-to-face will have to adapt their teaching styles to the new medium. For such a drastic transformation, researchers studied the effectiveness and satisfaction of 185 instructors in a nursing program and tested their levels of satisfaction. The vast majority of the sample, almost 95%, were women, with more than 75% of the surveyed instructors being over 50 years old. The researchers used online surveys to measure instructor satisfaction, which found that, after years of teaching traditional, seated instruction, online course facilitation offered the same level of satisfaction (Howe et al., 2018; Shea, 2019). A critique of the study would be that its subjects-- older, female nurses-- would likely not extrapolate to populations with a drastically different makeup.

### **Related Literature**

#### **Adult Learners**

There are two classifications of adult learners: Traditional and non-traditional students. Traditional students are between the ages of 18-24, are enrolled in college full-time, and reside at the college (Metzner & Bean, 1987). Traditional students transition to college directly from high school, and account for 49% of enrolled students (U.S. Department of Education, 2016). The remaining 51% of students are non-traditional, age 25 or older who do not reside at the institution and can be enrolled either full-time or part-time. With non-traditional student enrollment expected to grow 34% in the next ten years (U.S. Department of Education, 2016), institutions need to focus on ways to best meet the needs of its non-traditional students (Woods & Frogge, 2017).

Non-traditional students often need to satisfy lower-level needs like housing, food, and transportation, which can interfere with their educational goals (Jacoby, 2015). Non-traditional

students can require a higher level of technical support as they must learn both the educational technology and the course content simultaneously (Cherrstrom et al., 2019). Non-traditional students need more social and academic support than their traditional counterparts (Remenick, 2019) and they often struggle with barriers such as lack of childcare and lack of financial resources (Hunter-Johnson, 2017). Finally, non-traditional students are more diverse and more likely to be first-generation college students (Rabourn et al., 2018) and are less likely to graduate because of the competing priorities they face balancing their home, work, and school (Ellis, 2019).

### **Online Education**

Online education, also referred to as distance education or e-learning, has evolved significantly from the first online course taught in 1981 (Harasim, 2000) to the present, where almost half of all college students are enrolled in online programs (Ginder et al., 2019). Defined as “instruction delivered on a digital device that is intended to support learning” (Clark & Mayer, 2016, p. 30), online education is quickly becoming the most popular mode of educational delivery, with almost 90% of four-year colleges now offering courses and entire degree programs completely online (Sun & Chen, 2016). However, while online education is popular with students, faculty struggle to adapt their seated courses to an online delivery mode, especially in situations where the faculty is significantly older and not as technologically proficient as their students, who are tech-savvy and expect high levels of technology integration in every area of life (Morreale & Staley, 2016).

Common themes in the research have provided a glimpse into what online instructors and their learning institutions can do to make online learning more effective. In particular, teaching presence and social presence seem to be prevalent factors in programs that experience higher

success. Teaching presence is the integration of facts and information in a classroom environment, in addition to question responsiveness and helping students engage in their own learning (Garrison et al., 2001; Keengwe & Kidd, 2010; Pelz, 2010). This is an important factor in the success of seated classrooms, so it makes sense that the research has identified this factor as a component of success in online courses.

The other factor, social presence, while not new, seems to have been noted in a considerable amount of literature as a proven technique for effective learning environments in the digital classroom. Social presence is similar to teaching presence, without the knowledge or educational component. It is the communicator's ability to express themselves through emotion and promote group cohesion (Short et al., 1976; Garrison et.al., 2001). In a digital environment, this can be more difficult than a traditional classroom, forming a bond with the instructor is as important and has been identified as a key factor in student success in the digital classroom (Kehrwald, 2008; Payne, 2009). So, while the actual learning environment is drastically different-- face-to-face instruction versus a digital classroom-- it seems that some of the same skills required to be a competent instructor and ensuring student success are the same.

### **Course Success Rates**

The course success rate, also referred to as the course completion rate, reflects the institutional culture of the organization as it pertains to student success and correlates with student satisfaction (Moore & Fetzner, 2009). The course success rate is calculated by dividing the number of students who complete a course with a grade of A, B, or C by the number of students who start the course (Bishop et al., 2018). For example, if 25 students start a course, and 20 complete the course with a C or higher, the course success rate is 80%. The course success rate is an important metric for institutions because it can lead to increased completion

(graduation) rates (Walker, 2019), and it can be used to make data-informed decisions by administrators for changes to courses and professional development for faculty (Stout, 2016).

### **Student Success**

Student success can be defined in many ways. To the student, success almost certainly means a passing GPA and the completion of his or her degree program (Afkhaminia et al., 2018). But it is the first year of the student's academic program and how well the student adjusts to the new environment, the strength of the psychological foundation imparted by the institution, and their proficiency with critical thinking skills that most often predict the eventual success in their academic programs (van der Zanden et al., 2019).

To the institution and its instructors, success is defined in many ways, but has multiple contributing factors. These factors could include student retention levels (Muljana & Luo, 2019), graduation rates and instructor proficiency (Manteufel & Karimi, 2018), all of which are indicators of successful students as a whole. Instructors and institutions' goals for student success should be intertwined (Carpenter et al., 2016).

To the community and greater society, student success means increased competitiveness in the global economy by both the workforce as a whole and the national economy, compared to its peers. In less than a decade, at the current rate of economic growth, 11 million degree-requiring jobs will be vacant, due to the lack of qualified graduates to fill them (Mehaffy, 2018). This first requires student success at the basic level of college entry, which is the ability to maintain and express remedial skills required at the college level, which includes math, reading, and writing proficiency adequate enough to qualify for even a Community College education (Mourad & Hong, 2017).

This literature review covers many concepts and discusses many studies which contribute to the industry's understanding of student success. This could range from teacher efficacy to adherence to legal requirements for ensuring students with a disability receive equivalent quality of education to increasing the students' sense of self-efficacy. However, one topic not yet discussed, but covered in an important study, is the importance of student placement in courses for which they are qualified and will have the most success. Mourad and Hong (2017) cover this topic well in their study of a diverse group community college students who opted not to take a developmental reading course prior to the start of the first semester.

This study compared the academic fates of 481 students, 159 of which opted out of a developmental reading course and began their first semester. The resulting data were not consistent across the cohort concerning whether a reading comprehension class added to the success of the student, however, reading ability was a consistent factor, particularly in minority demographics, such as African Americans. Meaning, in multiple studies (Cho et al., 2012; Jaggars et al., 2015), including this one, placement of students in courses that properly prepare them for their future coursework might significantly affect their future success with that coursework. This must be a consideration when attempting to determine a student's viability for success in online college and the digital learning environment.

### **Instructor Self-Efficacy**

Faculty and administrators have a responsibility to create a supported environment in which instructors feel safe and can seek help to positively affect their own job performance. This kind of empowerment promotes personal and professional growth, leading to increased self-efficacy (Ferencz, 2017). High instructor self-efficacy operates concurrently with student self-efficacy, as teachers and students share the responsibility for success in the classroom, leading to

the students viewing themselves as the agents of their own change (Bidabadi et al., 2016). While knowledge of the taught material is important, knowledge alone is not enough; the self-efficacy of a teacher, to include college professors and instructors of online courses, has been consistently shown as the essential ingredient in the success of students in every learning environment (Mahler et al., 2018).

Other characteristics that supplement the instructor's perception of their own self-efficacy is emotional intelligence and the instructor's ability to operate independently without the influence of the team composed of his or her fellow faculty members. Current research demonstrates that higher emotional intelligence and self-efficacy are positively correlated but that neither gender nor experience mediated that effect (Wu, et al., 2019). Because self-efficacy is the individual's belief in their own ability to perform a directed task in a specific environment to a pre-determined level of quality (Dellinger et al., 2008, p. 752), instructors would benefit from training that simulates the actual environment in which they will be teaching. Such realism is highly likely to improve individual self-efficacy, which typically negates other extenuating factors such as time stress and teacher burnout (Skaalvik & Skaalvik, 2019).

### ***Efficacy in Student Engagement***

Consistent communication to the students from instructors is considered a positive method of meaningful engagement (Scholl et al., 2017). The more opportunities the instructor must create positive experiences with the students, the better student functioning tends to be, which creates positive expectations about student academic abilities, leading to increased learning and academic progress (Hughes et al., 2012). This consistent communication decreases stress in both the student and instructor, and this decrease in stress significantly predicts positive outcomes in teaching quality and student engagement (Wong et al., 2017).

A considerable amount of research shows that additional training for instructors in various methods of engaging students increases both their sense of self-efficacy in student engagement and the quality of their student engagement (Bradshaw et al., 2018). This is a recurring theme in the research, that teacher education programs improve the instructor's sense of self-efficacy in student engagement and their actual efficacy in student engagement. This implies connection between training, the increase in self-efficacy, and instructor efficacy in engagement, especially when the teacher promotes a culture of engagement within the classroom (Daniels et al., 2017; Draus et al., 2014; Jepson & Ryan, 2018; Li et al., 2017)

A 2019 study of 467 Chinese middle school teachers who were trained in online courseware showed that even in an online environment, emotional intelligence was a key characteristic of the instructors that were the most effective in their digital classrooms (Wu et.al., 2019). In particular, emotional intelligence was the primary element of instructor self-efficacy and these two components, emotional intelligence, and self-efficacy, were the main drivers of classroom performance. This study, in which almost two-thirds (66.8%) of the cohort was female and 76% were below 40 years old, measured their online classroom performance compared with their self-reported self-efficacy as a teacher. The researchers also measured their level of emotional intelligence through a validated survey intended specifically for teachers' level of self-efficacy.

In summary, at least with teachers that closely match the demographics of this study, there seems to be a strong correlation between emotional intelligence and instructor self-efficacy in the digital classroom. This could potentially mean that if a learning institution wants to increase its instructors' self-efficacy, it might be beneficial to first increase their emotional intelligence, or at least increase them concurrently. However, a potential critique to the

application of this study would be its surveyed cohort's applicability to different populations with varied demographic and cultural composition.

One study made an interesting connection between instructor self-efficacy and student engagement. The research involved 18 elementary and middle schools, with 143 participants, all of whom were teachers at those schools. During the study, the researchers held focus groups in which the participants shared their perspectives concerning local and national policy initiatives and whether those initiatives increased or decreased both their trust in the school administration and their sense of personal agency in the classroom. While the instructors were well-trained, as they were directly part of national initiatives to increase test scores, the researchers discovered that an additional element, the teachers' sense of personal agency, had a great effect on their efficacy in student engagement. Efficacy in student engagement and an increased sense of personal agency must be an emphasis of the organization, not an afterthought (Wilcox & Lawson, 2018).

### ***Efficacy in Instructional Strategies***

Different from student engagement, efficacy in instructional strategies means the instructor is effective at teaching the course material. Self-efficacy in this skill means the teacher believes they have the skill to be effective at this task (Chichekian & Shore, 2016). This can be accomplished through motivational training, but also with practical, real-world training and its connection to pedagogic theory; this would also include techniques in dealing with students' disruptive and negative behavior in the classroom (Juuti et al., 2018). The mere presence of motivational, technological, and pedagogical support by the institution typically positively impacts teachers' self-efficacy, so it would be in the best interest of the institution to ensure those resources are available to its faculty and staff (Christian, 2017).

A study that investigated the relationship between teacher self-efficacy and how their increased sense of self-efficacy for instruction translated into increased efficacy in classroom instruction (Ciampa & Gallagher, 2018). The researchers surveyed 173 new Canadian and American elementary school teachers in a study that addressed two research questions directly related to the relationship between their self-efficacy in instruction and their actual instructional ability. The pertinent finding in this research was that the new teachers who also received higher levels of coursework during their educational programs related to increasing their skills in classroom instruction (Ciampa & Gallagher, 2018). However, the researchers also found that instruction alone inflated the new teachers' sense of efficacy, which decreased once they were actually in a classroom with students and understood the nature of classroom instruction. A definite limitation of this study is that it surveyed elementary school teachers, which may or may not translate to higher levels of educators, such as high school or college, or in different formats, such as online courses versus seated courses.

While a general theme encountered in the literature is that instruction for teachers to increase both their actual efficacy and their sense of self-efficacy is regarded as the most effective method (Chichekian & Shore, 2016; Ciampa & Gallagher, 2018; Lotter et al., 2018), very little research, if any, focuses on other ways to increase teacher efficacy and self-efficacy in classroom instruction. For instance, Nwosu et al., (2019) noted that increasing teacher resilience in the face of novel challenges in the classroom increased teachers' self-efficacy, but this method of doing so is not well understood, despite seeming commonsensical. However, overall, other methods of increasing instructor self-efficacy in the classroom, aside from instruction in how to do so, must be explored (Lotter et al., 2018).

### *Efficacy in Classroom Management*

Classroom management is a teachable skill that instructors can use to intervene during disruptions, plan around unexpected contingencies, and effectively manage time effectively for the purpose of maintaining a high culture of learning (Patterson et.al., 2017). There is a considerable amount of literature regarding this topic, and much of it contains the same theme: Training teachers to better manage the classroom increases their own self-efficacy and actual efficacy in that skill. The most common types of training mentioned in the literature are visualization and self-reflection.

Visualization and self-reflection are tools that require the teacher trainee to think about a given problem and multiple potential solutions, placing the teacher in an authentic classroom in which the taught skills are required, and then discussing the event and the trainee's performance after-the-fact (Kasson & Wilson, 2017; Kelleci et al., 2018; Watson & Marschall, 2019). While these seem to be the most widely use or accepted practices in increasing teachers' efficacy in classroom management, the trend in the literature points to limited engagement with students and a classroom environment at a slow pace before the teacher conducts a full class being the most effective training method.

One of the most common themes noted in the literature concerning efficacy in classroom management is a specific method to increase instructors' skill in that area. That specific method is self-reflection, which includes after-the-fact viewing of video by the trainee (Harlin, 2014; Kong, 2010) and guided self-reflection (Patterson & Seabrooks-Blackmore, 2017). No matter the method used, researchers seem to agree, through the literature, that instructional programs designed to increase teachers' self-efficacy is the most effective tool to actually increase that trait (Kurt et al., 2014; Pajares, 2002). In other words, educational institutions should not attempt to

leave improvement of the individual instructor's efficacy in classroom management to chance or depend on the instructor him or herself to improve that skill without support. Researchers agree that improving instructors' classroom management efficacy, in either seated programs or online programs, should be a top-down, guided, and institutionalized process, designed specifically to increase that skill.

### *Efficacy in Use of Computers*

Teachers face various barriers to efficacy with technology, including their own resistance to integrating it into their own programs. This might include a lack of technical support but also a lack of obvious application of the technology already in their academic environments (Hsu, 2016). To overcome this resistance and to reduce the impediments to the integration of technology, educational institutions must apply current and new research as a solution (Siegel et al., 2017). This includes varying the opportunities and methods of technology integration in the online environment to create a balance between students' needs and the curriculum (Brzeski, 2014) and employing a wider variety of technology into the digital classroom (Coyne et al., 2017), both of which will likely improve attitudes and increase self-efficacy in the use of technology by teachers in the digital environment (Awofala et al., 2017).

As with most of the literature already discussed, the most commonly accepted method to increase both self-efficacy and actual effectiveness with computers and the various types of software online courses will use is repeated training with the tools the instructor will use (Srisupawong et al., 2018). The most common theme in the literature that researchers encounter when studying teacher self-efficacy is the resistance to new technology, particularly from older instructors who are generally uncomfortable with technology overall (Gudek, 2019; Lloyd et al., 2012; Reid, 2017). This is not an obstacle that cannot be overcome, as nearly every article that

noted this issue also described additional training as the course of action to improve teachers' familiarity with the software or learning management system, thus improving their self-efficacy.

One study that stood out in the review of literature was Gudek's study, which was published in 2019. In his research, Gudek noted that there was a distinct relationship between the participants' attitude toward technology and its use in the classroom, to include online classes, and those participants' sense of self-efficacy with computers and related technology (Gudek, 2019). This seems commonsensical, that a person who is proficient with technology would be more accepting of its implementation in the classroom, but the research confirmed this relationship. A criticism of the use of this article to apply to broader demographics is that the study was conducted on music teachers of elementary school students (Gudek, 2019). While teachers are the target demographic of the present study, the present research is focused on community college instructors, not elementary school teachers.

In this study, the researchers used validated tests to measure attitudes: A computer self-efficacy scale and a digital technology attitude scale. Both used Likert-style answers to 10 and 39 questions, respectively. The results of the surveys found a definite relationship between computer self-efficacy and attitudes toward computer use in the classroom, as previously mentioned. An interesting finding was that there was no relationship between the teachers' general knowledge of computers and the participants' self-efficacy but there was a relationship between knowledge of specific computer software and their levels of self-efficacy. Meaning, simply knowing how to use a computer did not affect their sense of self-efficacy but knowing how to use the software or having other, advanced, or special knowledge about computers did affect the participants' sense of self-efficacy. Additionally, this sense of self-efficacy dependent

on the type of computer knowledge was generally in favor of male teachers, with female teachers lagging slightly behind (Gudek, 2019).

### **Faculty professional development**

Because instructor and faculty skill in administering and using the courseware is the primary factor in ensuring the legal requirements of accessibility are met and a great enhancement of student success, professional development in those areas is critical to the success of online courses (Baran & Correia, 2014; Kerrick et al., 2015, Huss & Estep, 2016). It is therefore incumbent upon the academic institution to provide such training, early and often. This requires serious effort on the part of all stakeholders in higher education, as both the legal and economic requirements of the school must be met by professional development that meets those needs (Carpenter et al., 2016). All stakeholders must collaborate on this effort, as supporting digital learning requires skills from not only the instructors, but administrators and faculty in topics such as, course evaluation, instructional design, accessible materials creation, and even train-the-trainer courses for the faculty themselves (Mohr & Shelton, 2017).

Professional development is required not only for the hard skills, like programming, instructional design, and course evaluation, but also in the soft skills, such as providing flexibility in their approach to classroom instruction and understanding the various ways students learn in an online environment, if academic institutions want to improve student success (Wynants & Dennis, 2018). Institutions must pay attention to the instructor and faculty self ratings of various skills, while at the same time looking forward to provide skills and training in areas that might not be considered by the instructors and faculty, as online programs begin to require more resources. The success of these programs will be directly proportional to the

relevance of the material and training provided by the institution to the participants of that training (Roberts, 2018).

Throughout this section the primary theme noted in the literature is the professional development of teachers in the classroom (Watson & Marschall, 2019), with the technology they will be using (Gudek, 2019), and for increased teaching efficacy and classroom management (Jepson & Ryan, 2018). While the techniques and methods for increasing efficacy and self-efficacy may be in debate throughout the literature, the fact that additional training during college and during onboarding of new teachers is reflected throughout the body of literature on this topic. More study is required to better understand the most effective trends and practices, as not much agreement can be found in the literature.

One study that was important to this theme was a case study which posited that professional development for teachers in the classroom should not begin when the teacher begins his or her profession, but during training for that profession (Watson & Marschall, 2019). The early start to the habitualization of professional development solidifies good habits, formalized personal learning techniques which can be improved over time, and increases self confidence and self-efficacy in the learner. Ultimately, professional development is a personal responsibility which the learning institution can formalize but the faculty must personally embrace, endorse, and in which they should routinely participate. Varying the problem sets in which the teachers must operate, to provide differing situations to which the instructor is exposed, should improve overall competence and self-efficacy, all of which is accomplished through rigorous and routine professional development.

## Summary

The topics discussed in this literature review discuss various viewpoints with respect to increasing student success, improving instructor effectiveness, and enhancing individual self-efficacy in the online classroom. The starting point, however, is the operationalization of Knowles theory of adult learning and the five pillars of online learning. Academic institutions must recognize that older, non-traditional students require different resources than traditional students and the instructors that interact with those non-traditional students also require knowledge and skills to interact with and manage the students in their digital classrooms.

This training, so long as it is part of the institutional culture and provided to instructors on a regular basis, should improve student learning outcomes and instructor self-efficacy in many areas. The institution should conduct a needs assessment to determine which of those areas are most deserving of attention and provide training to their instructors for the purpose of mastering the material and overcoming obstacles that would inhibit instructor proficiency. This begins with instructional skills and training to employ new forms of technology but should also include motivational coaching to assist instructors in enhancing their own perception of their ability to integrate technology into a digital learning environment.

The research on this topic is far from exhaustive. While there is a significant amount of research on the promotion of self-efficacy in the classroom environment, there is a notable gap in the research concerning the relationship between instructor self-efficacy and course success rates. This is remarkable especially with relation to the online classroom environment, as skills required for student success in a seated classroom are markedly different than skills required for student success in an online classroom. This research should help fill the noted gap in this area by contributing to the current body of literature in this field by providing data usable by higher

education administrators, who can then focus resources in directions needed to build instructor self-efficacy and increase student success.

## **CHAPTER THREE: METHODS**

### **Overview**

This chapter includes the methods that were used to conduct this study. This chapter will discuss the research design, the participants and setting, and the instrument that was used. A detailed explanation will be given of the data collection process and procedures used to conduct the study. This chapter will conclude with a comprehensive explanation of the statistical analysis and rationale, data screening measures, assumption tests, alpha level, and effect size for the hypothesis.

### **Design**

A correlational design is used to show the relationship between variables and the extent to which the variables are related (Seeram, 2019). The purpose of this predictive correlational study was to determine to what extent an instructor's perception of their academic self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor can predict their online course success rate. The course success rate is calculated by dividing the number of students who complete an online course with a grade of A, B, or C by the number of students who start the course (Bishop, Martirosyan, Saxon, & Lane, 2018). This section describes the predictive correlational design of this study and the rationale of this design selection.

A quantitative non-experimental predictive correlational design was used for this study. This design is most appropriate for this study given the data for this research were collected numerically using a survey instrument and those data were analyzed statistically and compared with prior research using an objective, unbiased approach (Creswell, 2015).

As mentioned in Chapter One, following are the definitions of the variables for this research:

- *Self-Efficacy* – the personal belief about oneself and how one uses the skills one possesses under various conditions (Bandura, 1997).
- *Student Engagement* – Engagement with students is comprised of several factors, including facilitating an active learning environment, appropriate levels of academic rigor, and dynamic communication with students (Coates, 2007).
- *Instructional Strategies* – A process to employ educational tactics and goals designed to elicit specific behavior in learners, using structure and goals that will accomplish the desired strategy (Sangwan, 2019).
- *Classroom Management* – The management of student behaviors and organization of the classroom are primary concerns for educators. These skills are demonstrated through the formation of daily routines, which save time and promote good order within the classroom. These elements of classroom management are necessary if the educator expects the students to have positive learning experiences and meet the overall learning outcomes as defined by academic program (Rawlings Lester, et al. 2017).
- *Use of Computers* – The use of computers falls into three elements: Basic skills, informational, and learning. Basic skills are a demonstration of students' information technology knowledge; the use of computers as an informational tool is a gauge of how well the student can use technology to research; and, finally, the use of computers as a learning tool is a demonstration of students' ability to practice their knowledge and skills (Tondeur, et al. 2008).

### Research Question

**RQ1:** How accurately can an online instructor's online course success rate be predicted from a linear combination of their academic self-efficacy factors?

### Null Hypothesis

**H<sub>0</sub>1:** There is no significant predictive relationship between the criterion variable (online course success rate) for online instructors, and the predictor variables (self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor).

### Participants and Setting

The participants for the study were faculty at a community college in North Carolina. The college serves three rural counties and hosts a diverse student population in terms of age, ethnicity, and socioeconomic status. An online survey was sent to faculty who taught either a hybrid course or a 100% online course in the Fall 2020 semester. A hybrid course is defined as a class "in which instruction takes place in a traditional classroom setting augmented by computer-based or online activities which can replace classroom seat time" (Scida & Saury, 2006, p. 518). Faculty were asked background characteristic questions, including their gender, age, ethnicity, highest degree level, years of teaching experience, full-time or adjunct status, if they have ever taken an online class as a student, and the subject matter that they teach (Table 1).

**Table 1**

Background Characteristics (N=65)

Characteristic	Category	N	%
Gender	Man	16	24.6
	Woman	40	61.5

	Non-binary	1	1.5
	Prefer Not to Answer	1	1.5
	Missing	7	10.8
Age Range	18-24 Years Old	1	1.5
	25-34 Years Old	10	15.4
	35-44 Years Old	17	26.2
	45-54 Years Old	17	26.2
	55-64 Years Old	12	18.5
	65-74 Years Old	1	1.5
	Missing	7	10.8
Highest Degree Level	Associate Degree	10	15.4
	Bachelor's Degree	8	12.3
	Master's degree	36	7.7
	Doctorate Degree	5	55.4
	Missing	6	9.2
Ethnicity	American Indian or Alaskan Native	1	1.5
	Asian	1	1.5
	Black or African American	9	13.8
	Hispanic	2	3.1
	White	44	67.7
	Missing	8	12.3
Current Employment Status	Adjunct Faculty, Continuing Education	2	3.1
	Adjunct Faculty, Curriculum	18	27.7

	Full-Time Faculty, Curriculum	1	1.5
	Full-Time Faculty, teaching a combination of Continuing Education and Curriculum	34	52.3
	Missing	7	4.6
Experience in Years	0-4 Years	17	26.2
	5-9 Years	16	24.6
	10-14 Years	12	18.5
	15-19 Years	8	12.3
	20-24 Years	5	7.7
	25 or More Years	1	1.5
	Missing	6	9.2
Online Student Experience*	Yes	52	80.0
	No	6	9.2
	Missing	7	10.8

A total of 65 faculty participated in the survey which resulted in a 0.082 effect size ( $R^2$ ) at a statistical power of 0.510 for an alpha level of 0.05, and a response rate of 21.7%. The implications of which are discussed at length in chapter five. Classical statistical theory typically uses  $n=30$  as a minimum threshold to determine if the central limit theorem can be applied to a survey that receives lower response rates than expected. While this is not especially preferable, particularly from the standpoint of being precise, this precedent has been used many times and can therefore be justified in its use here.

### **Instrumentation**

The instrument used for this research was the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale (MNESEOTS) (Robinia, 2008). This instrument was created by Kristi Robinia for her dissertation with Western Michigan University to measure the self-efficacy of faculty who were teaching online classes. This instrument was a modification of another instrument, the Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Hoy, 2001), which was intended for K-12 teachers. Robinia modified a few questions and added some questions pertinent to teaching online courses to develop the MNESEOTS instrument for her research and its application to higher education.

This instrument was appropriate for this research because it assesses faculty self-efficacy by asking faculty 32 different questions to get a comprehensive picture of how a faculty feels about their abilities as an online instructor. Researchers have used the MNESEOTS in dissertation research, (Black, 2019, King-Jones, 2013; Richter, 2015; Steffens, 2018; Vilkas, 2017; and Wiseman, 2017), and the MNESEOTS has been published in several peer-reviewed journal articles, (Corry & Stella, 2018; Horvitz, Beach, Anderson & Xia, 2015; and Robinia & Anderson, 2010). This instrument is not exclusive to nurse educators and has been used for other types of educators as well (Black, 2019, King-Jones, 2013; Richter, 2015; Steffens, 2018, Vilkas, 2017; and Wiseman, 2017) because the questions in the instrument are not specific to any type of teaching discipline. While other researchers have used the MNESEOTS in their research to assess faculty self-efficacy, there is no research that shows using the MNESEOTS to predict the success of online courses for instructors (Black, 2019, King-Jones, 2013; Richter, 2015; Steffens, 2018, Vilkas, 2017; and Wiseman, 2017).

Reliability of the MNESEOTS was evaluated first by Robinia with two pilot tests of participants to refine the wording of the survey instruments. It then underwent a series of statistical tests, showing a reliability coefficient of .80 verifying that each question was one-dimensional (Robinia, 2008). From there, examination of reliability revealed that the coefficient alphas were “student engagement = .926, classroom management = .929, instructional strategies = .942, and computer skills = .857. The reliability coefficient for the instrument as a whole = .926” (Robinia 2008, p. 73). Validity was confirmed through interrater agreement by an expert panel of three experienced online faculty followed by a pilot study of 15 educators (Robinia & Anderson, 2010). These results indicated that this instrument is reliable and valid for research purposes (Gall et al., 2007).

The MNESEOTS scale of measurement is a Likert scale, ranging from one to nine, with the categories as follows: 1-2, Nothing; 3-4, Very Little; 5, Some; 6-7, Quite a Bit; 8-9, A Great Deal. When taking the survey, faculty were asked to apply the prefix of “I can do...” to answer each of the 32 questions. The highest possible score on this scale is 288, indicating that the faculty has the highest possible perception of their self-efficacy as an online instructor, and the lowest possible score on this scale is 32, meaning that the faculty has the lowest possible perception of their self-efficacy as an online instructor. There are a total of eight questions asked in each category (self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor). Permission to use the MNESEOTS for this research was granted by the creator (see Appendix A). See Appendix B for the instrument.

### **Procedures**

IRB approval and permission from the community college was obtained. See Appendix D

for IRB approval. The survey questions were placed in an online survey using Qualtrics®. A pilot study was not required since this instrument has been previously validated. The Institutional Effectiveness and Research (IER) department at the community college sent out a survey link to all faculty teaching curriculum courses online (100% online or hybrid) in Fall 2020 for the survey via Qualtrics®.

Survey data were collected by the IER department at CCCC and will be stored remotely on a server at Qualtrics® for a period of at least three years before being permanently deleted. Only the IER department will have online access to the data through Qualtrics®, the researcher will not have access to the raw survey data. Per the college's data research policy, the data were deidentified and given to the researcher to analyze once collection was completed.

Participants were told that their participation was voluntary and anonymous and will take 5-10 minutes of their time. Participant consent was given digitally, prior to completing the survey. See Appendix F for participant consent form. Participants were given the opportunity to participate in a drawing for one of six \$50.00 Amazon gift cards if they chose to submit their name and email address separately at the end of the survey. The collection time was four weeks, and emails were sent out at week two and week three to remind participants of the deadline. Data collection continued until the minimum sample size was met. Once a sufficient sample was collected, the IER department downloaded the data, along with the corresponding course success rates into an Excel file, which did not have any identifying information about the participants, for analysis by the researcher. The researcher downloaded the file on a password-protected computer and will keep the file for a period of three years and then destroy it.

### **Data Analysis**

To analyze the data, a multiple regression determined if a correlation exists between the criterion and predictor variables (Gall, Gall, & Borg, 2007). This analysis of the data was used to indicate if self-efficacy (criterion variable) can predict course success rates (predictor variable). Further exploration of the predictor variables looked specifically at self-efficacy in the areas of student engagement, instructional strategies, classroom management, and the use of computers.

Using Microsoft Excel®, the researcher measured the four predictor variables of self-efficacy using the MNESEOTS and the scoring directions from the MNESEOTS, detailed in Appendix C, and scored each of the four subscales, student engagement, instructional strategies, classroom management, and use of computers to find the mean score for each participant and verify that there was no missing data. A score was calculated for each of the 32 questions asked, based on a range of one through nine for each question, with one being very low self-efficacy and nine being very high self-efficacy for that question. Each question was scored from one to nine, then the numbers were added together and divided by eight to reach a mean score for each category of question (See complete scoring directions in Appendix C.)

Prior to analysis, the data were screened by the researcher to ensure that each question had an appropriate response and that no responses were missing. Any questions that were missing a response were excluded from analysis. The Qualtrics® survey was also designed so that all questions must be answered, and the participant could move to the next question or complete the survey without giving an answer for each question. This function eliminated the problem of missing data. The researcher then created a data file with Excel to be imported to SPSS® for analysis.

Using SPSS®, a multiple linear regression analysis was used to examine the linear relationship between the predictor variable, course success rate and the criterion variables, self-efficacy in student engagement, self-efficacy in instructional strategies, self-efficacy in classroom management, and self-efficacy in the use of computer. In addition, demographic information was compiled to describe the sample, from the background characteristics that were collected with the survey (gender, age, ethnicity, highest degree, years of teaching experience, if the instructor has ever taken an online course as a student, and the subject area in which they teach).

The predictor variables were examined to determine if there was a predictive relationship with an instructor's course success rate and their feelings of self-efficacy as an online instructor. The course success rate was calculated by dividing the number of students who completed a course with a grade of A, B, or C by the total number of students who started the course (Bishop, et al. 2018). The total number of students included those who completed the course (with any outcome or grade) as well as those who withdrew or dropped the course (Bishop, et al. 2018). A multiple regression was appropriate for this analysis because it looked at the prediction of the data and because there was more than one predictor variable (Gall, et al. 2007).

There were three assumptions used with a multiple regression analysis, taken from the Liberty University (2019) Quantitative Resources folder for the School of Education:

1. Assumption of Bivariate Outliers: Use scatter plots between all pairs of independent variables ( $x$ ,  $x$ ) and also the predictor variables ( $x$ ) and criterion variable ( $y$ ). Look for extreme bivariate outliers.
2. Assumption of Multivariate Normal Distribution: Look for a linear relationship between each pair of variables. If the variables are not linearly related, the power of the test is

reduced. A researcher can test for this assumption by plotting a scatter plot for each pair of predictor variables ( $x_1, x_2$ ) and between the predictor variables ( $x_1$ ) and the criterion variable ( $y$ ). Look for the classic “cigar shape.”

3. Assumption of non-Multicollinearity among the Predictor Variables: If a predictor variable ( $x_1$ ) is highly correlated with another predictor variable ( $x_2$ ), they essentially provide the same information about the criterion variable. If the Variance Inflation Factor (VIF) is too high (greater than 10), a multicollinearity exists and has violated this assumption. Acceptable values are between 1 and 5 (Liberty University, 2019). Table 3 provides the collinearity statistics.

Once the data were collected and analyzed, the null hypothesis was rejected at the 95% confidence level. The findings are reported in the next section of this research.

## CHAPTER FOUR: FINDINGS

### Overview

The purpose of this predictive correlational study was to determine if an instructor's perception of their academic self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor could predict their online course success rate, as measured by the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale (MNESEOTS). The researcher collected data from 65 faculty members at a community college in North Carolina. A multiple linear regression was conducted with course success rate as the criterion variable, and the four types of self-efficacy as the predictor variables.

### Research Question

**RQ1:** How accurately can an online instructor's online course success rate be predicted from a linear combination of their academic self-efficacy factors?

### Null Hypothesis

**H<sub>0</sub>1:** There is no significant predictive relationship between the criterion variable (online course success rate) for online instructors, and the predictor variables (self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor).

### Descriptive Statistics

Of the 65 participants, the majority of the sample was female ( $n = 40$ ; 61.5%). The rest of the sample included males ( $n = 16$ ; 24.6%), a non-binary individual (1.5%), and a large percentage of individuals who were missing or preferred not to respond (12.3%) (see Table 1). Over half of the individuals had a master's degree or higher ( $n = 41$ ; 63.1%). Almost all participants had taken an online course as a student ( $n = 52$ ; 80.0%). Approximately two-thirds

of participants were White ( $n = 44$ ; 67.7%). The next most common ethnicity was Black or African American ( $n = 9$ ; 13.8%). Half the sample reported their employment status as full-time faculty, curriculum ( $n = 34$ ; 52.3%). About half of participants had 9 or fewer years of experience ( $n = 33$ ; 51.0%).

Means, standard deviations, skewness, and kurtosis for all continuous variables are reported in Table 2.

**Table 2**

Descriptives of Continuous Variables

Scale	<i>N</i>	Min	Max	<i>M</i>	<i>SD</i>	Cronbach	Skew		Kurtosis	
							$\alpha$	Stat	<i>SE</i>	Stat
SucRate	65	25	100	78.52	19.684	-	-0.897	0.297	0.192	0.586
StuEng	65	3.33	8.75	6.196	1.191	.892	-0.117	0.297	-0.515	0.586
InsStr	65	3.29	9	7.004	1.243	.882	-0.585	0.297	0.054	0.586
ClaMan	65	3.67	9	7.065	1.17293	.859	-0.756	0.297	0.368	0.586
UseCom	59	4.88	9	7.335	0.99597	.817	-0.408	0.311	-0.459	0.613

Skewness values for all variables fell within the acceptable  $\pm 2$  cutoff range. Similarly, kurtosis values for all variables fell within the  $\pm 7$  cutoff range (Hair et al., 2010). All composites had a Cronbach's alpha above .7, indicating a high level of internal consistency (Nunnally & Bernstein, 1978) (see Table 3).

**Table 3**

Collinearity Statistics

Model	Collinearity Statistics
-------	-------------------------

		Tolerance	VIF
1	(Constant)		
	StuEng	.411	2.435
	InsStr	.155	6.461
	ClaMan	.223	4.484
	UseCom	.260	3.851

a. Dependent Variable: Course Success Rate

## Results

### Hypothesis

The research question and hypothesis under consideration was:

**RQ1:** How accurately can an online instructor's online course success rate be predicted from a linear combination of their academic self-efficacy factors?

**H<sub>01</sub>:** There is no significant predictive relationship between the criterion variable (online course success rate) for online instructors, and the predictor variables (self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor).

### Data Analysis

A multiple linear regression was conducted to assess the predictive strength of the criterion variable (course success rate) with self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as predictor variables. The overall model was not significant and predicted only 1.4% of the variance in section success rate ( $F(4, 54) = 1.211, p = .317, \text{Adj } R^2 = .014$ ). None of the four types of self-efficacy were significantly

related to success rate when controlling for the other types of self-efficacy. See Tables 4-6.

Because the results were not statistically significant, the null hypothesis was not rejected.

**Table 4**

Regression Model Results

Model	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	Sig.
Regression	1839.301	4	459.825	1.211	.317 <sup>b</sup>
Residual	20496.688	54	379.568		
Total	22335.989	58			

a. Dependent Variable: CourseSuccessRate

b. Predictors: (Constant), UseCom, StuEng, ClaMan, InsStr

**Table 5**

Model Summary

Model	<i>R</i>	<i>R</i> <sup>2</sup>	Adjusted <i>R</i> <sup>2</sup>	SEM	Sig.
1	.287a	.082	.014	19.48251%	.317

a. Dependent Variable: CourseSuccessRate

b. Predictors: (Constant), UseCom, StuEng, ClaMan, InsStr

**Table 6**

Coefficients

Model	Unstandardized		Standardized		<i>t</i>	Sig.
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>t</i>		

(Constant)	69.964	19.823		3.529	0.001
StuEng	3.572	3.349	.217	1.067	0.291
InsStr	-8.835	5.527	-.530	1.599	0.116
ClaMan	7.526	4.827	.430	1.559	0.125
UseCom	-0.721	5.041	-.037	0.143	0.887

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a. Dependent Variable: CourseSuccessRate

### **Data Screening and Assumptions Testing**

#### **Assumption of Bivariate Outliers**

Scatter plots were used between all pairs of independent variables ( $x$ ,  $x$ ) and also the predictor variables ( $x$ ) and criterion variable ( $y$ ) to look for extreme bivariate outliers. A visual inspection of the scatterplot showed no extreme outliers. See figures 2-6.

#### **Assumption of Multivariate Normal Distribution**

A scatter plot for each pair of predictor variables ( $x$ ,  $x$ ) and between the predictor variables ( $x$ ) and the criterion variable ( $y$ ) to look for a linear relationship between each pair of variables and for the classic “cigar shape.” A visual inspection of the scatterplot showed fairly even distributions of residuals for all values of the predicted dependent variable, and the scatterplots of the dependent variable against each of the continuous predictors showed little evidence for a linear relationship between success rate and each of the four types of self-efficacy. See figures 2-6.

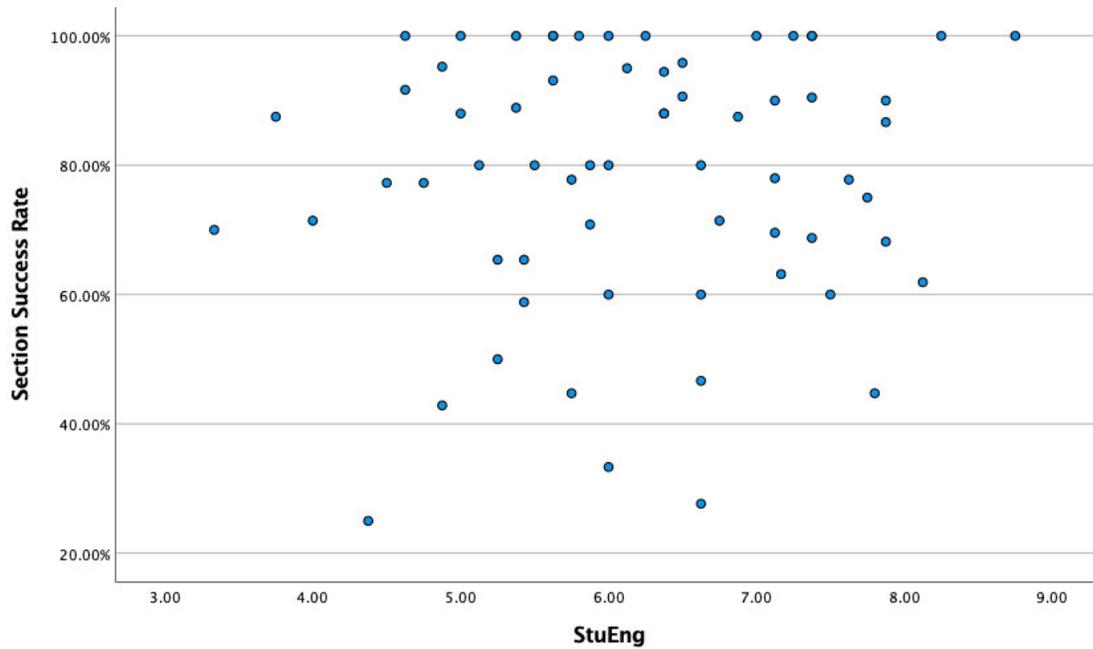
#### **Assumption of non-Multicollinearity**

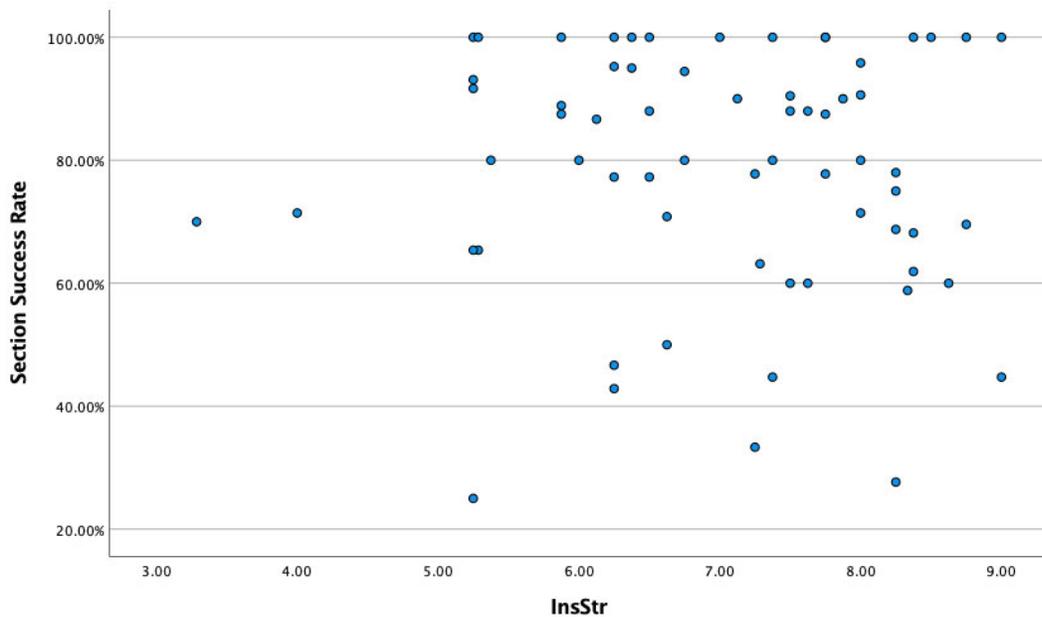
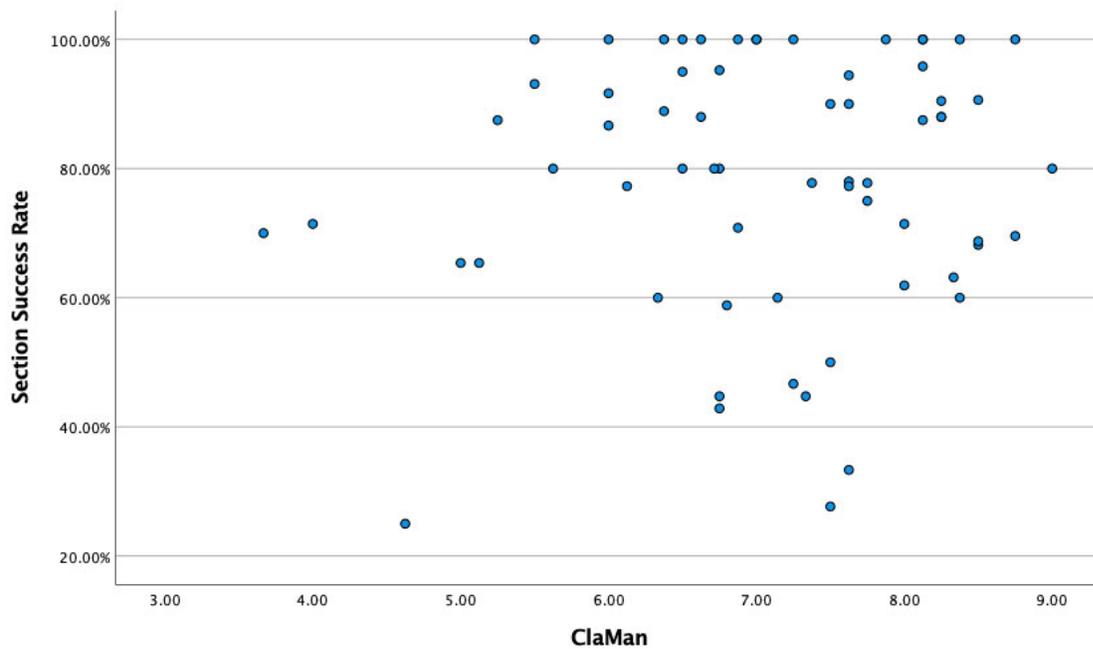
If a predictor variable ( $x$ ) is highly correlated with another predictor variable ( $x$ ), they essentially provide the same information about the criterion variable. If the Variance Inflation Factor (VIF) is too high (greater than 10), you have multicollinearity and have violated this

assumption. Acceptable values are between 1 and 5. The data showed that all tolerance scores were above 0.1, and all VIF scores are below 10. Therefore, there was no multicollinearity between the variables. See Table 4.

**Figure 2**

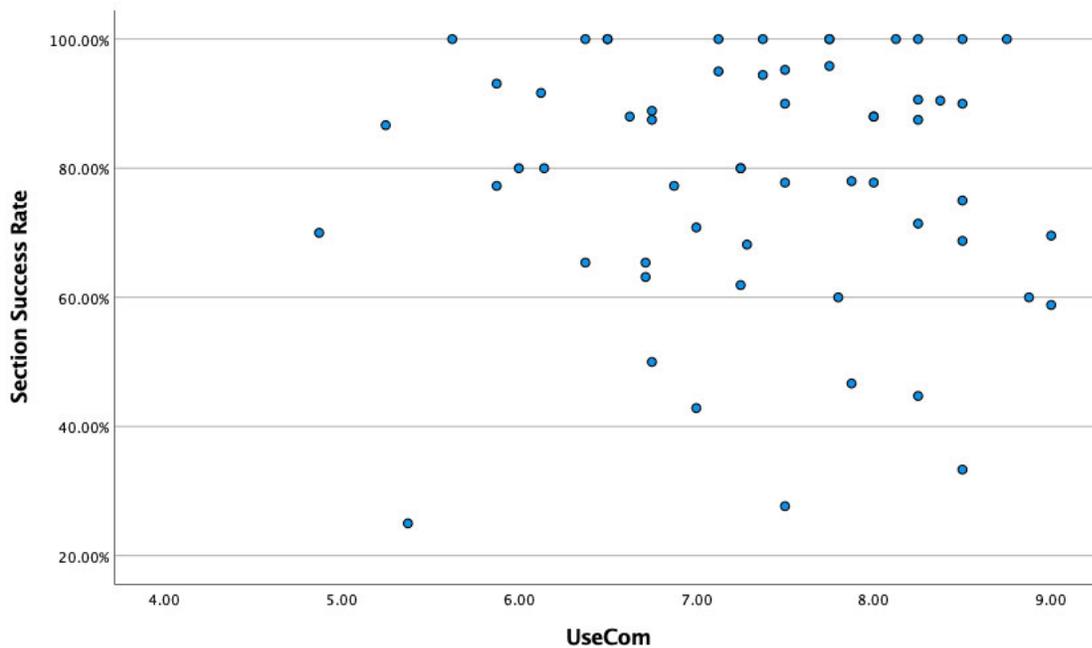
*Scatterplot of Success Rate Against Student Engagement*



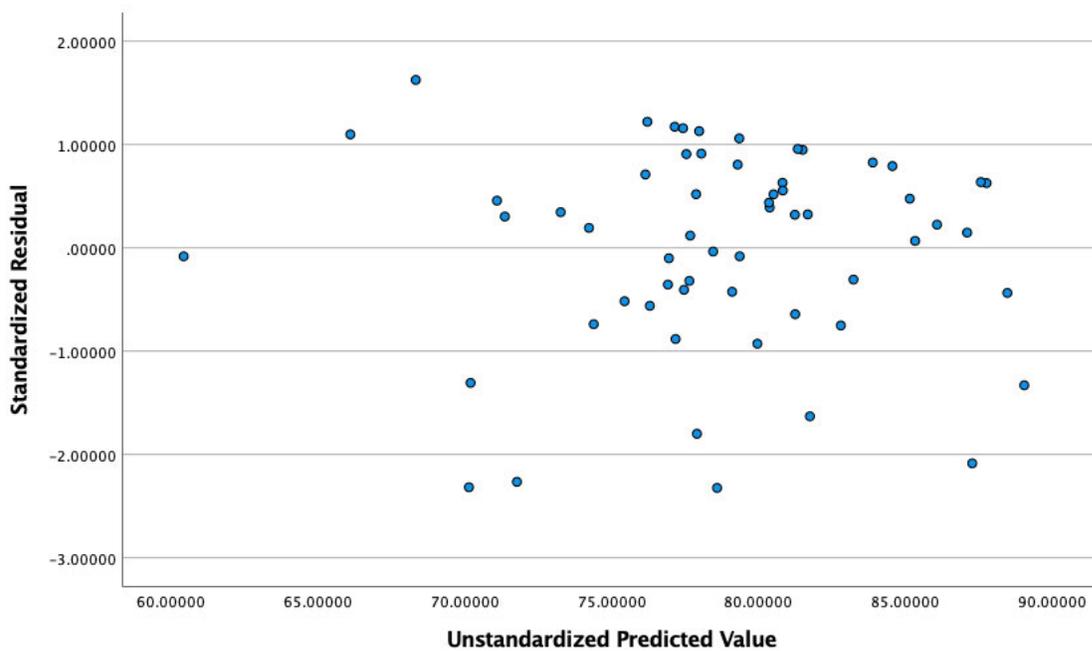
**Figure 3***Scatterplot of Success Rate Against Instructional Strategies***Figure 4***Scatterplot of Success Rate Against Classroom Management (ClaMan)*

**Figure 5**

*Scatterplot of Success Rate Against Use of Computers*

**Figure 6**

*Scatterplot of Standardized Residuals Against the Unstandardized Predicted Values*



## CHAPTER FIVE: CONCLUSIONS

### Overview

This research focused on the self-reported efficacy of instructors and compared that against their course success rate to see if there was a correlation. In this chapter, the results of the research will be discussed as it relates to the literature review in chapter two. The implications of the research will be examined and explained as well as the limitations identified with this research. This chapter will conclude with recommendations for further research on this topic.

### Discussion

The purpose of this predictive correlational study was to determine to what extent an instructor's perception of their academic self-efficacy in student engagement, instructional strategies, classroom management, and use of computers as an online instructor can predict their online course success rate, as measured by the Michigan Nurse Educators Sense of Efficacy for Online Teaching Scale (MNESEOTS) (Robinia, 2008). Self-efficacy is a judgment of capability (Hardy et al., 2017), which is typically self-reported and presumably irrespective of the individual's actual qualifications, education, or experience with the subject matter in question. Course success rate is calculated by dividing the number of students who complete a course with a grade of A, B, or C by the number of students who start the course (Bishop et al., 2018).

The research question under consideration was:

**RQ1:** How accurately can an online instructor's online course success rate be predicted from a linear combination of their academic self-efficacy factors?

This research compared how an instructor felt about their self-efficacy in the areas of student engagement, instructional strategies, classroom management, and the use of computers to see if there was a correlation between these areas and the instructor's course success rate. Faculty

completed a survey which asked a series of questions on each of those four areas to determine how they felt about their own abilities as an instructor. The college provided the course success rate for the responding faculty. The statistical analysis of the survey data and the course success rate showed that there was not a statistically significant correlation between how an instructor felt about themselves in these four areas compared to how successful their students were in their course.

This conclusion is surprising, as a considerable amount of the literature supports the idea that teacher self-efficacy and student success are related. For instance, Bidabadi et al. (2016) noted such a correlation and how the teachers and students form a sort of symbiotic relationship in their sharing of success in the classroom, with the teachers' level of self-efficacy giving the students a sense of control over their own fate in the classroom. The same is true for Mahler et al., (2018), who found that teacher self-efficacy was the essential ingredient of student success in the classroom. The contradiction between the present research and the established research does not point to a flaw in the instrument or differences in the population from other surveyed teacher groups, nor does it invalidate any other literature.

This does not mean that instructor self-efficacy is not related to student success, however. A large portion of the literature has confirmed the positive relationship between instructor self-efficacy and student success (Mahler et al., 2018; Wynants & Dennis, 2018; and Jepson & Ryan, 2018), with professional development being a key component of high levels of instructor self-efficacy (Baran & Correia, 2014; Kerrick et al., 2015, and Huss & Estep, 2016). The conflicting results from the present research could be attributed to a lot of variables, which simply means more study with this community college and this instructor population would be prudent.

In a comparison between the present research and Robina's (2010), which can be

considered the seminal study on the topic of instructor self-efficacy, some similarities and differences must be noted. Robina measured one of the same variables, teacher self-efficacy, but did not compare that level with the instructors' course success rate. Instead, she compared their perceived self-efficacy against individual variables, such as age, experience level, gender, and academic rank. In contrast, the present research did measure self-efficacy, but did not compare the level of self-efficacy with any of those variables, but instead with outcomes, the student success rates.

In both studies, teacher self-efficacy was found to be independent of multiple factors. In Robina (2010), age, gender, teaching experience in years, and education were not factors in teacher efficacy, and thus not necessarily a factor in student success. In the present study, instructor self-efficacy was found to be independent of student course success rates and other variables were not measured against or used to mediate this variable.

The main difference between the two studies, then, was how teacher self-efficacy was measured. In Robina (2010), various factors (age, gender, role, rank, years of nursing experience, years of teaching experience, number of online classes taught) that were thought to contribute to teacher self-efficacy were measured. In the present research, these factors were not considered in how instructors rated their own self-efficacy, nor were they considered in the overall student success rates.

### **Implications**

The goal of this study was to contribute to the current body of knowledge pertaining to instructor self-efficacy and course success. The lack of correlation between student engagement, instructional strategies, classroom management, and the use of computers as it pertains to course success in this research does not necessarily mean that no such correlation exists. A closer look

at the survey responses from one institution will be indicative of the culture of the institution and identify areas of strengths and weaknesses in the faculty body.

While the overall results of this research were not statistically significant, there are a few implications identified that were significant. For example, when looking at the individual survey results, the instructor who was the lowest in student engagement with a 3.75% on a 9-point scale had an 88% course success rate while one of the instructors who was the highest in student engagement with an 8.125% on a 9-point scale had an 62% course success rate. This suggests an opportunity for the college to provide professional development for faculty focused on both increasing engagement in the classroom and building self-confidence.

One way this could be accomplished is by sharing the course success rates with faculty compared to how they feel about themselves. Research shows that professional development for teachers is key to both student success and self-efficacy (Wynants & Dennis, 2018). This increased competence increases confidence, which in turn generates higher levels of teacher self-efficacy, leading to increased student engagement and better classroom management, resulting in students taking responsibility for their own success in the classroom, rather than depending on the teacher's efforts alone (Bidabadi et al., 2016). Therefore, a combination of more training and sharing course success rates might improve teacher self-efficacy, which should further improve student success levels.

Another interesting finding in the individual survey results was that the instructor with the lowest course success rate of 28% had an average efficacy of 7.47% on a 9-point scale while the instructor with the highest course success rate of 100% had an average efficacy of 8.59% on a 9-point scale. Another individual survey result showed the faculty with the lowest self-efficacy in instructional strategies of 4.75% on a 9-point scale had a course success rate of 65%. This

small bit of data suggests that on the extreme ends of the measured variables, there does seem to be correlation between self-efficacy and student success. However, within the middle of the distribution, there is less of a relationship, which is what the results show. There could be a relationship between the instructors' perceived self-efficacy and their experience in online teaching, as there was with Robina (2010), but more research with this population would be needed to establish such a correlation. Research shows that teaching and practical experience in general do not influence online teaching self-efficacy (Wu et.al., 2019), so it becomes apparent that specific training only improves teachers' self-efficacy regarding the object of that specific training (Skaalvik & Skaalvik, 2019).

From a college administration perspective, looking at the individual survey data showed an overall efficacy rate of 6.98% on a 9-point scale and an overall course success rate of 80.3%. This suggests that faculty who responded to the survey at this college have a high level of self-efficacy and course success rates that are slightly higher than the state average of 72% from all the community colleges in North Carolina in the 2020-2021 school year (NCCCS, 2021). So, while individual levels of self-efficacy did not seem to affect course success rates, a collective rating of self-efficacy affected overall course success rates positively. Because this is the first study on this population, and there was no other found studies for populations in the same state, it is currently unknown if such a correlation exists elsewhere or if these results are unique. Other research implies that these results should not be unique (Chichekian & Shore, 2016; Ciampa & Gallagher, 2018; and Lotter et.al., 2018).

### **Limitations**

This study had several limitations for consideration. It is important to note that the multiple linear regression for this analysis was run on non-linear data. Most modern statistical

techniques in regression apply a robust estimation method which makes the data linear.

The most prominent limitation is that the research was conducted in one community college in North Carolina, which is not necessarily representative of any community college in either the state or throughout the United States (Fowler, 2009). The internal validity of the survey instrument is potentially strong enough to make the results generalizable to other populations, through which other researchers could infer that the results could apply to other teacher populations in other community colleges. This study should serve as a starting point for measuring other community colleges, even if generalizability cannot be assured. Even having a few measures in common, however, could assist with extrapolation and generalizability ability (Stewart & Rhodes, 2016). However, for more accuracy, surveying other teachers and faculty at other community colleges using validated measures and applicable variables would be prudent.

Another limitation of this study is the presence of response bias. Fink (2013) notes that response bias comes from how respondents are different from non-respondents in various or unknown ways and are therefore unlike the target population as a whole. This difference could range from respondents having a higher perceived self-efficacy than the target population to nonrespondents being unwilling to participate due to their lower course success rates. A variety of reasons could exist for the possibility of response bias, but future opportunities for research should take every opportunity to limit its potential effect on the results. In line with the limitation concerning generalizability to other community colleges, the size of the sample was limited by the size of the college. The community college from which the sample was selected is a medium-sized, rural institution. However, even small community colleges in urban areas are larger than the biggest rural community colleges, so the teacher and faculty populations are much different in size. Combined with the size of the institution, the differences in student populations

between urban and rural community colleges could have an effect on the educators' perceived effectiveness, which could have different effects in the survey results. As an example, Kaur (2017) reported that urban-based educators were significantly more effective in their course success rates than rural educators, which was specifically measured in her study. Thus, such a limitation should be factored in both this and future research on similar populations.

Finally, the response rate by the faculty is a limitation. The response rate was 21.7%, or 65 out of the 300 that were sent surveys. While such a low number can be used with the central limit theorem, the precision of the results should be higher than allowed by the theorem. This does not mean the research is invalidated, but that further research with better response rates would increase the credibility of the results.

The design of this predictive correlational study has limitations that also must be considered. Nonexperimental study designs cannot necessarily be used to predict an association, or even demonstrate or establish a causal relationship between variables throughout multiple populations, as the independent variables cannot be manipulated practically or even ethically (Reio, Jr., 2016). However, irrespective of the discovered correlation between the variables within the study, accurately reporting the results is paramount. The possibility of misreporting results or reporting them inaccurately is potentially also a limitation of nonexperimental research designs, especially if the research's design is inexact (Reio, Jr., 2016).

### **Recommendations for Future Research**

The results of this study demonstrated that more research must be done in the area of self-efficacy as it pertains to course success to produce statistically significant results. Very little research has been published focusing on instructor self-efficacy and the correlation to course success indicating there are opportunities for further research in this area.

Recommendations for future research include the following:

1. Expand the size of the study to include multiple institutions and more types of colleges and universities to reach a wider faculty perspective.
2. Conduct a qualitative study and interview both faculty and their respective students to compare how a faculty feels about their self-efficacy versus how the student feels about their faculty's efficacy.
3. Survey both online faculty and faculty who teach in person to see if any difference exists in self-efficacy based on the delivery method of instruction.
4. Model Robina (2010) by surveying for factors that might influence the instructors' sense of teacher self-efficacy at the same time as comparing against course success rates.
5. Compare urban and rural community college populations to each other to determine if urban and rural community college educators have different levels of self-efficacy as compared against course success rates.

Important insight can be gained in the areas of self-efficacy by pursuing this research further to broaden the knowledge base in this field of study. Additionally, attempting to demonstrate a relationship between specific variables, such as experience and self-efficacy or location of educational institution and self-efficacy, could reveal some helpful data that might be useful in improving overall student success at this level of education.

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**APPENDIX A - Author Permission for Use of Instrument**

 Kristi Robinia [REDACTED]  
Mon 9/16/2019 10:19 AM  
Martin, Denise ☺

 FinaltoolMNSEOT.docx  
20 KB

[ EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content. ]

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Dear Denise:

I have had several students from Liberty inquire about using the tool. There is no charge, and I am happy to have students use the tool (and modify if needed) for their research work. I published in the "Journal of Professional Nursing" Volume 3 25 Number 3 May-June 2010, so the work is over 9 years now. The article was "online teaching efficacy of Nurse Faculty". The tool was not published there in its entirety so I've attached.

Good luck with your dissertation work!

Kristi Robinia PhD, RN  
Associate Dean and Director | School of Nursing  
Northern Michigan University  
[REDACTED]

\*Located on the beautiful shores of Lake Superior upon the ancestral homelands of the Anishinaabeg

...

## APPENDIX B - IRB Approval

**LIBERTY UNIVERSITY.**  
INSTITUTIONAL REVIEW BOARD

October 28, 2021

Denise Martin  
Daniel Baer

Re: IRB Exemption - IRB-FY21-22-61 THE RELATIONSHIP BETWEEN INSTRUCTOR SELF-EFFICACY AND ONLINE COURSE SUCCESS RATES AT A COMMUNITY COLLEGE

Dear Denise Martin, Daniel Baer,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

**Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB.** Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at

[irb@liberty.edu](mailto:irb@liberty.edu).

Sincerely,  
**G. Michele Baker, MA, CIP**  
*Administrative Chair of Institutional Research*  
**Research Ethics Office**