Fall 11-2018

A Mixed Method Analysis on the Relationship Between Engagement, Achievement, Satisfaction, and Syllabus Design in a Private Midwest University

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by

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A Dissertation submitted to the Education Faculty of Lindenwood University

In partial fulfillment of the requirements for the

Degree of

Doctor of Education

School of Education

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This dissertation has been approved in partial fulfillment of the requirements for the degree of

Doctor of Education

at Lindenwood University by the School of Education

Dr. Joseph Alsobrook, Dissertation Chair	11/30/18 Date
Dr. Katherine Herrell, Committee Member	11/30/18 Date
Dr. Kevin Winslow, Committee Member	11/30/18 Date

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

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Acknowledgements

The completion of this dissertation would not have been possible without the guidance and leadership from my dissertation chair, Dr. Joseph Alsobrook, and committee members, Dr. Katherine Herrell and Dr. Kevin Winslow. Also, a special thank you goes to Dr. Christie Rodgers. Without her infectious energy and weekly check-ins, I would not have come this far. I extend my heartfelt gratitude.

I would also like to thank the participating faculty at the research site. Your willingness to participate is truly appreciated.

To my parents, Paul and Laura Musket, thank you for your support in my education through the years. To my grandfather, Doyle Dumas, thank you for walking the steps I want to follow in and your unwavering support. Also, to my husband, Rich and children, Ryleigh and Logan, for their encouragement, patience, and sacrifice while I pursued this endeavor.

Abstract

Background: Online learning is now at the forefront of education, making a college degree more accessible than ever before. With online enrollments at an all-time high, quality instruction is essential to the sustainability of the institution and ultimately affects student enrollment and retention. Research exists on the effectiveness of syllabus design and the use of inventories, but the gap in the existing literature lies in combining the two.

Purpose: The purpose of this mixed methods study was to analyze possible relationships between syllabus design and student achievement, student engagement, student satisfaction, faculty instruction, and faculty satisfaction.

Research Design: An Online Syllabus Inventory (OSI) was developed as an evaluative and instructional tool and served as the independent variable for syllabus design between administration of control and experimental courses.

Data Collection and Analysis: This mixed methods study synthesized quantitative and qualitative data gathered from 28 online courses and 379 students. Data sources included student analytics from a learning management system, course evaluations from a student information system, and feedback from study participants.

Findings: In the domain of student achievement, a significant difference was found between two control and experimental courses. In the domain of student engagement, a significant difference was found in six courses. Among the sample, course-level factors were found to be significantly different in the domain of student satisfaction. No significant difference was found among instructor-level factors.

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Chapter One: Introduction

In the last two decades of the 20th century, the hallowed halls of higher education took a virtual shift. At the time of this writing, online learning was commonplace. As one of the largest and fastest growing segments of U.S. higher education (Clinefelter & Aslanian, 2016), "online enrollment has continued to outpace overall enrollment in U.S. higher education, fueling greater student and institutional interest" (Legon & Garrett, 2018, p. 11). According to the Integrated Postsecondary Education Data System (IPEDS), 28% of all undergraduate students were taking at least some online courses in 2014. Twelve percent of these students were in a fully online program. Also, in 2014, 25% of graduate students were enrolled in fully online programs. (Bailey, Vaduganathan, Henry, Laverdiere, & Pugliese, 2018)

In decades recent to this writing, there was also a widespread interest in the outcomes of higher education (Brown & Kurzweil, 2017; Duncan, 2015; Taylor, 2017). According to Taylor (2017),

> as the focus in higher education becomes more concentrated on outcomes versus inputs, the impact of inputs on outcomes becomes a critical area of research. Over the past few decades, a sizable literature has emerged on the effects of teaching quality on student outcomes, and as institutions seek to improve student outcomes, we are seeing a renewed interest in this field of study. (para. 2)

According to Tam (2014), maximizing educational effectiveness involved specifying intended outcomes, managing teaching to maximize attainment of those ends, and detailed assessment of the extent to which desired results manifest as actual educational outcomes or their consequences.

The current study investigated the outcomes of student academic achievement, satisfaction, and engagement. The ultimate purpose of any course is learning — academic achievement. According to Cyril (2005), "Academic achievement or academic performance is the outcome of education, the extent to which a student, teacher or institution has achieved their educational goals" (p. 39). An important "intermediate outcome" (Astin, 1993, p. 278), student satisfaction can be defined as "the student's perception pertaining to the college experience and perceived value of the education received while attending an educational institution" (as cited in Bollinger & Martindale, 2004, p. 62). Longitudinal research documented strong correlations between student satisfaction and retention, persistence, graduation rates, and ultimately alumni relations and giving (Ruffalo Noel Levitz, 2017). Assuring active student engagement was central to successful online learning (Legon & Garrett, 2018), and the wealth of literature on student engagement reinforced its relevance to distance education (Redmond, Heffernan, Abawi, Brown, & Henderson, 2018). A means, as well as an end, "student engagement in higher education was an area highlighted consistently as having significant influence on student outcomes, including the successful completion of studies" (Redmond et al., 2018, p. 183). According to Hattie (2017), the power of active engagement in improving student academic outcomes was unmatched. Furthermore, "the more students engage in their learning environment, the more likely they are to complete, learn and be satisfied with their experience" (Taylor, 2017, para. 6). As Morris, Finnegan, and Wu (2005) concluded from their research, students engaged with course content —time spent on task and frequency of participation — were more likely to persist and complete successfully. Specifically, "three variables were statistically significant, and were good predictors of

final grades: number of discussion posts viewed, number of content pages viewed, and seconds on viewing discussion pages" (p. 228).

At the forefront of efforts to increase student participation that led to increased academic achievement and satisfaction were faculty — teachers. After an extensive review of literature and synthesis of over half a million studies, Hattie (2003) concluded the following:

> We should focus on the greatest source of variance that can make [a] difference—the teacher. We need to ensure that this greatest influence is optimised to have powerful and sensationally positive effects on the learner (p. 3) . . . The focus is to have a powerful effect on achievement, and this is where excellent teachers come to the fore — as such excellence in teaching is the single most powerful influence on achievement (p. 4).

Accordingly, faculty satisfaction, which Bollinger, Inan, and Wasilik (2014) defined as "the perception that the process of teaching in the online environment is efficient, effective, and professionally beneficial," (p. 184) and faculty instruction — the methodologies used to realize the student outcomes of academic achievement, engagement, and satisfaction — were also investigated in this study. "Student academic achievement . . . is a strong predictor of graduation. How students are engaged . . . impacts student persistence, retention, and graduation. Instruction sits at the intersection of each and can serve as a positive or negative means to reinforce student opportunities" (Jankowski, 2016, p. iv).

Purpose

The purpose of this mixed methods study was to analyze possible relationships between syllabus design and student achievement, student engagement, student satisfaction, faculty instruction, and faculty satisfaction. To achieve this purpose, a weighted and objective online syllabus inventory (OSI) was developed and served as the independent variable. The OSI was an evaluation instrument. Completing the OSI assessed the inclusion of evidence-based practices for online course design and delivery, as well as information required by the Midwestern university at which the study was conducted (e.g., including course descriptions exactly as they are found in the current catalog). The evidence-based practices incorporated into the OSI were derived from standards prescribed in the Quality Matters (QM) *Higher Education Rubric* (5th ed.) (Maryland Online, 2014) and influenced reported to have a high-effect on student achievement through meta-analytic research (Hattie, 2009, 2012, 2015, 2017). Within the OSI, indicators were weighted based on their relationship to high-effect influences reported by Hattie (2017); the higher the effect size, the greater the weight.

In addition to being evaluative, the OSI was instructive; it served as a means of professional development. Using the OSI, faculty new to online teaching received an introduction to evidence-based practices. According to Baran, Correia and Thompson (2011), "online teachers often feel uncertain, uneasy, and unprepared for the challenges of teaching online, and also lacking in the tools and conditions that they use to establish their expertise and teacher persona in the traditional classrooms" (p. 435). "Support and development programs, therefore, are essential in helping teachers engage in the processes of pedagogical inquiry and problem solving as they reflect on the

interactions among content, online technologies, and pedagogical methods within their unique teaching contexts" (Baran & Correia, 2014, p. 98) For experienced online faculty, weighted indicators introduced or reinforced the importance of certain evidence-based practices (e.g., feedback).

Within the context of this study, providing a sample syllabus that scored 100% on the OSI and including examples of how evidence-based practices may be incorporated into a course served to augment the instructive component. The overarching purpose of the OSI was to assist faculty to develop a syllabus that simultaneously functioned as a compass (destinations; ends), map (pathways; means to ends), and blueprint for developing/building courses in a learning management system.

Questions and Hypotheses

Hypotheses.

H01: There is no difference in student achievement between unique instructors' courses that were designed using the OSI and courses that were not.

H02: There is no difference in student engagement between unique instructors' courses that were designed using the OSI and courses that were not.

H03: There is no difference in student satisfaction between unique instructors' courses that were designed using the OSI and courses that were not.

Research questions.

RQ1: How do the results of an objective, comprehensive, and evidence-based syllabus inventory relate to student engagement, achievement, and satisfaction in online courses?

RQ2: How does using an objective, comprehensive, and evidence-based syllabus inventory to design online courses relate to faculty instruction and satisfaction?

Rationale

Checklists, rubrics, and inventories were tools for evaluating course quality for both teachers and learners (Allen & Tanner, 2006). For example, Wieman and Gilbert (2014) developed and tested a 'teaching practices inventory' (p. 553) to guide evaluation and improvement of course design and delivery in on-campus undergraduate biology, computer science, earth sciences, mathematics, physics, and statistics (STEM) courses. Roblyer & Wiencke (2003) examined the use of a rubric to examine observable, measurable interactive qualities in distance education courses to enhance achievement and student satisfaction. Legon and Runyon (2007) reported findings from studies using the Quality Matters Rubric — quality standards for online course design and a peer-based course review process — on student learning outcomes and student course evaluations. The literature did not, however, include research on the use of a *syllabus* — a common denominator of all courses — evaluation tool to promote evidence-based practice. Findings from this study fill this gap by reporting the effects of using an objective, comprehensive, and evidence-based syllabus inventory to guide evaluation and improvement of online course design and delivery. Wieman (2015) found a major dilemma facing institutions was the need for an objective strategy to measure the quality of teaching and recommended integrating an evidence-based self-evaluation tool in addition to other measures, such as peer feedback, student work samples, and teaching portfolios, etc. According to Luke, Woods, and Weir (2015), "If we follow Dewey's (1915) analogy about the curriculum as a journey or a map, those of us actually involved

in making the curriculum in official syllabus documents too often proceed without map or compass" (p. 8). According to Vai and Sosulski (2016), a syllabus is an essential feature of online courses that "provides structure . . . and outlines expectations" (p. 33). Findings from meta-analytic research also supported the importance of syllabus design. Ambrose, Bridges, DiPietro, Lovett, and Norman (2010) proposed that a congruent structure or outline of learning intentions, evidence-based teaching and learning strategies, and assessment methodologies, shared with learners prior to learning, was central to student achievement and ownership in the learning process.

Study Limitations

A limitation of this study was a sample size of 14 participants who were all teaching at the same university. Four of the 14 participants were adjunct faculty; 11 were full-time faculty. Additionally, the term length varied between six of the control and experimental courses used in this study. For participant two, the control course was four weeks and the experimental course was six weeks. For participant three, the control course was 16 weeks and the experimental course was six weeks. For participant seven, the control course was six weeks and the experimental course was 16 weeks. For participant eleven, the control course was eight weeks and the experimental course was 16 weeks. For participant twelve, the control course was eight weeks and the experimental course was 16 weeks. For participant fourteen, the control course was 16 weeks and the experimental course was eight weeks.

Definition of Terms

Evidence-based practice*:* Making pedagogical decisions informed by relevant empirical research evidence (Hew & Cheung, 2013).

Online Syllabus Inventory*:* A weighted and objective survey of syllabus components.

Student achievement*:* The status of subject-matter knowledge, understandings, and/or skills at one point in time (National Board for Professional Teaching Standards, n.d.).

Student engagement*:* An individual's interest and enthusiasm for school, related to academic performance and behavior (Gallup, 2013).

Student satisfaction*:* "Referring to student perceptions of learning experiences and perceived value of a course" (Belland, Kuo, Schroder, & Walker, 2013, para. 4).

Unique courses*:* The same course taught by the same instructor. In the context of this study, unique courses were labeled 1a-1b, 2a-2b, 3a-3b, etc.

Summary

The purpose of this mixed methods study was to analyze possible relationships between syllabus design and student achievement, student engagement, student satisfaction, faculty instruction, and faculty satisfaction. To achieve this purpose, a weighted and objective online syllabus inventory (OSI) was developed and served as the independent variable. Completing the OSI assessed the inclusion of evidence-based practices for online course design and delivery, in addition to information required by the Midwestern university at which the study was conducted. Among control (pre-OSI) and experimental (post-OSI) online courses taught by the same instructors, relationships in the domain of student achievement were analyzed using quantitative achievement data from performance on the same assignments/assessments. In the domain of student engagement, relationships were analyzed using quantitative participation data from LMS

analytics. In the domain of student satisfaction, relationships were analyzed using quantitative data from course and instructor evaluations. In the domain of faculty instruction and satisfaction, relationships were analyzed using qualitative data via feedback from open-ended questions.

Chapter Two: Review of Literature

The purpose of this mixed methods study was to analyze relationships between syllabus design and student outcomes, including achievement, engagement, and satisfaction, as well as faculty instruction and satisfaction. Following the work of Wieman and Gilbert (2014), a weighted and objective online syllabus inventory (OSI) was developed and served as the independent variable. The OSI was an evaluation instrument. Completing the OSI assessed the inclusion of evidence-based practices for online course design and delivery, as well as information required by the Midwestern university at which the study was conducted. The overarching purpose of the OSI was to assist the designer to develop a syllabus that simultaneously functioned as a compass (destinations; ends), map (pathways; means to ends), and blueprint for developing/ building courses in a learning management system.

Chapter Two presents a review of literature on course syllabi; indicators of effective teaching, including engagement, satisfaction, and achievement; methods of evaluating teaching; and professional development.

Online Learners

Online learners were changing the higher education landscape. According to the Online Learning Consortium (2017),

> the total pool of postsecondary students has been shrinking for each of the last three years [as we know]. At the same time, the demographics are shifting to a student community primarily comprised of adult and other contemporary learners, for whom distance learning often provides the best path to a post-secondary

> education. As schools compete for students in this environment, distance learning programs become essential to their ability to succeed. (para. 6)

The National Center for Education Statistics (n.d.) defined a nontraditional student as meeting one of seven criteria: has delayed enrollment into postsecondary education; attends college part-time; works full-time; is financially independent for financial aid purposes; has dependents other than a spouse; is a single parent; and/or does not have a high school diploma. As reported by Soares, Gagliardi, and Nellum (2017),

> [post-traditional learners are] individuals already in the workforce who lack a postsecondary credential yet are determined to pursue further knowledge and skills while balancing work, life, and education responsibilities…Post-traditional learners are typically older, or they are regularly engaged with the workforce. Some are parents or caregivers. Others have served in the military. Some or all of these traits may apply to one person. Many are financially independent due to their age. Unlike traditional undergraduates, post-traditional learners are rarely, if ever, just fulfilling an undergraduate student role at an institution. (p. 7)

Nationally, online students were working adults, balancing their education with jobs and other responsibilities. Averaging in age between 29 and 32, they had some college and no degree (Clinefelter & Aslanian, 2016; Friedman, 2017). The number of students falling into the nontraditional category was staggering, in part because of non-completion statistics (Regier, 2014). In 2016, there were more than 36 million Americans, aged 25 and older, with some college, yet no degree (Soares, Gagliardi, & Nellum, 2017).

Online learners made decisions about enrollment in higher education based on many factors. In order to succeed, “post-traditional learners need a more flexible learning

ecosystem that is distributed across different life stages, places, times, platforms, and experiences" (Soares et al., 2017, p. 9).

> For online learners, it is all about convenience and balancing course work with life's other demands. Online program strengths center on support services for the online learners. There is room for improvement on the perceptions of the online academic experience, which is still often compared to the in-classroom experience with which most students are familiar. Institutions have an opportunity to explore different teaching methods that facilitate student and faculty interaction and collaboration. (Ruffalo Noel Levitz, 2017, p. 17)

In response to the demand for flexibility, many schools offered both blended (or hybrid) and fully online courses to appeal to greater proportions of prospective students. According to Clinefelter and Aslanian (2017), "online education does not have to be 100% asynchronous or fully online . . . Calibrating the frequency of in-person contact is key for not alienating a large portion of learners" (p. 26). Blended courses may also have an academic advantage. After comparing outcomes between fully online and blended courses, Means, Toyama, Murphy, and Baki (2013) reported "effects were larger ($p <$ .05) when a blended rather than a purely online condition was compared with face-to-face instruction" (p. 35-36).

The length of online courses was another factor that influenced decisions to enroll in higher education. Shorter terms and multiple start dates per year were no longer novelties, but rather necessities (Clinefelter & Aslanian, 2017), and evidence was emerging that supported the academic veracity of this practice. According to Austin and Gustafson (2006),

> Overall we find that there is a significant improvement from taking shorter courses that cannot be explained solely by student characteristics. Using a very large database and by using more robust models this study provides more definitive results than have been achieved in past studies. Compared to a sixteen-week semester, there is an improvement at 8 weeks, 4 weeks, and 3 weeks. We also find that those benefits differ, peaking at four weeks. This complements the results of Scott (2003) who finds that classroom relationships and classroom atmosphere are two important factors that explain why performance is better in intensive courses than the traditional format i.e. there is a better bond between teacher and student when they meet every day than just two or three times a week. (p. 35)

Findings from Ferguson and DeFelice (2010) further supported shorter terms:

> It was hypothesized that students in an intensive five-week course would indicate different levels of perceived learning and different satisfaction levels than the full-semester online students. Perceived learning was lower for students in the five-week session, but not significantly so . . . Significant differences were [also] found in academic performance, with students in the five-week session showing stronger academic performance than the full-semester students…This could be explained, in part, by the intense nature of a condensed course, where students must be focused and "on-task" continuously, with no breaks. The learned material would be fresh in the students' minds with perhaps better recollection during testing. (p. 81)

Poellnitz (2008) and Kucsera and Zimmaro (2010) found instructors' effectiveness was equivalent between traditional and accelerated courses. According to Daniel (2000), Seaman (2004), Kretovics, Crowe, and Hyun (2005), and Anastasi (2007), academic performance and course evaluations were consistent between courses offered in traditional and accelerated formats. According to Regier (2014), "Accelerated courses reduce context switching by allowing students to dig deeply into two subjects for a shorter period of time. This creates a more efficient learning experience for students balancing many competing priorities" (p. 78).

Although online students reported convenience and flexibility as very important factors influencing their decision to take online courses (Clinefelter & Aslanian, 2016), the literature also included support for the opposite: structure. Structured degree pathways, tailored to the needs of the student, were critical to student persistence and success (Education Research Institute of America, 2015; Regier, 2014). In *Guided Pathways to Success: Boosting College Completion*, Complete College America (2012) offered recommendations for effective pathways to degrees, including end-to-end program design, ensuring a clear sequence of coursework; offering courses in block schedules; and ensuring courses were available when students needed them to support timely graduation. According to Masters (n.d.), a curriculum was a progression, and oftentimes teachers did not have a shared understanding of progress. This lack of consistency could have a detrimental impact on students, with learning becoming more random as a result. Transparent structure, however, could help to reduce the variance in the way students and teachers identified progress, helping to create a more informed perspective of the curriculum continuum.

> Schools need to understand how students' progress through a curriculum and it is likely that different students might progress in different orders and at different times. Having a clear idea of what impact means involves an understanding of progression, where students are in this progression, and not prescribing one progression for all. (Masters, n.d., para. 12)

Establishing fixed sequences in which coursework must be completed also supported a major finding from *How People Learn* (National Research Council, 1999): learning is enhanced through carefully constructed learning experiences that build upon previous learning and prepare students for subsequent learning.

Another reason that students enrolled in online courses was to launch a career with potential for employment and advancement. According to Clinefelter and Aslanian (2016), "online students are motivated by career success. Offering comprehensive career services tailored to the online student institutions stand out and improve key metrics around job placement" (p. 21). "The primary reason online students go to school is career advancement. Most already know their field of study and desired credential; thus, career exploration is not needed as much as assistance with their job search" (Clinefelter & Aslanian 2016, p. 31).

Course Syllabi

Traditionally, course syllabi could serve several different purposes, such as a contract between a faculty member and the students in a course or an outline to guide students through "the complexities of a course, its content, and learning outcomes" (Ludy et al., 2016, p. 1). "The syllabus allows teacher to provide students with a visual layout of the course and, ideally, an explanation of how to succeed" (Richmond, 2016, p. 2). Lang

(2015) proposed that syllabi should "outline the frame of [a] course and help students see the arc of intellectual development they will undergo during the semester" (para. 8). As inclusive records encompassing authentic information specific to an individual course, Parkes and Harris (2002) found syllabi to be an important resource for university administrators to audit course rigor and faculty accountability. According to Ludy et al. (2016), "The contractual nature of the syllabus has expanded greatly in recent years because policy statements are increasingly used to help settle appeals and grievances that may occur" (pp. 1-2). Researchers also found that students viewed course syllabi as learning contracts (Rumore, 2015) or course roadmaps (Matejka & Kurke, 1994; Parkes & Harris, 2002), which contributed to overall course culture. According to Vai and Sosulski (2016), a syllabus was an essential feature of online courses that "provides structure . . . and outlines expectations" (p. 33). According to Blinne (2013), while a chemistry lab, a private music lesson, and a traditional lecture course may vary in delivery, assessment, and organization, the syllabus for these courses had similar components and was vital to the creation of a common learning community and course tone. Emphasizing the importance of course syllabi, Calhoon and Becker (2008) reported that at least 70% of students acknowledged using the syllabus throughout the term. Ambrose et al. (2010) proposed that a congruent structure or outline of learning intentions, evidence-based teaching and learning strategies, and assessment methodologies, shared with learners prior to learning, was central to student achievement and ownership in the learning process.

According to Grunert (1997), the syllabus provided an important first impression for the instructor's teaching style, which may have lasting implications. Jenkins, Bugeja,

and Barber (2014) found more comprehensive course policies in syllabi led to higher instructor evaluation scores. Ishiyama and Hartlaub (2002) studied how the tone an instructor set contributed to the climate by manipulating course syllabi. They created two versions of the same syllabus, with policies identical in substance; but, one was worded in a punitive tone and the other in an encouraging one. They discovered that the tone used influenced students' judgments about instructor approachability. Students were reported to be less likely to seek help from instructors who worded policies in punitive language than from instructors who worded the same policies in rewarding language. Rubin (1985) dubbed instructors who word policies in boldface, block letters and promised harsh punishments, rather than offering a pedagogical rationale for the policy, as "scolders" (as cited in Ambrose, Bridges, DiPietro, Lovett, & Norman et al., 2010, p. 176). According to Palmer, Wheeler, and Aneece (2016), traditional syllabi could be rule-infested and contribute to "the detriment of student learning" (p. 37). Harnish et al. (2011) believed warm or encouraging syllabus phrasing allowed the natural hurdles between instructors and students to be overcome, all while cultivating a classroom community. Cullen and Harris (2009) found the biggest community building components of a syllabus to be instructor accessibility, required collaboration, and rationale for learning. Richmond (2016) emphasized the importance of outlining the rationale behind each assignment, contending student success correlated to the awareness of learning outcomes specific to each assessment or assignment.

Learning intentions at various levels, such as at the course, program, or institutional level, describe what students should know and/or be able to do after the learning experience is complete. Although learning intentions were a seemingly

fundamental component of course syllabi, Homa et al. (2013) found that only 64% to 80% of syllabi referenced learning outcomes. Researchers also reported syllabi that included learning outcomes did not align to assessments (Homa et al., 2013; Parkes, Fix, & Harris, 2003). According to Cullen and Harris (2009), formative and summative assessments should be tied to student learning outcomes in order to support the development of learner-centered syllabi.

Indicators of Effective Teaching

According to Arreola (2000), "higher education has yet to establish a universally accepted definition of the characteristics and skills necessary for teaching excellence" (p. 98). According to McGee, Windes, and Torres (2017), effective practices were collectively agreed upon practices, which were proven over time. Hammer et al. (2010) agreed teaching excellence did not have one common definition due to a variety of variables, which consisted of the type of student, modality, and content area. Wieman (2015) defined teacher quality as “the effectiveness with which the teacher is producing the desired learning outcomes for the given student population” (p. 8). Alemu (2014) found instructor personality and teaching skills to be the most defining characteristics of exemplary instructors; specifically, passion for the subject matter, accessibility to students, genuine in approach for student success, and fair grading policies. Similarly, Hammer et al. (2010) found realistic expectations, respectful and positive interactions with students, commitment to teaching, and communication skills to be characteristics of exceptional teaching. Yun-Chen & Shu-Hui (2014) believed charisma played a vital role in evaluating instructor excellence and defined charisma as the positive behaviors teachers displayed. Alemu (2014) described certain skills as necessary for teaching

excellence and observed that "predominant ability attributes used to describe effective instructors are being well prepared and organized, possessing subject knowledge, being able to explain difficult subjects using simple terms, and encouraging students to think critically" (p. 644). Instructors who were perceived by their peers as effective displayed the following characteristics: knowledgeable, helpful, organized, and responsive (Swanson, Frankel, & Slagan, 2005). Additionally, effective instructors knew how to create an effective learning environment through organization, preparation, and clarity (Barnes & Lock, 2010; Oredbeyen, 2010). In contrast, McGee et al. (2017) argued the culmination of preparation, knowledge, and experience did not equate to proficient teaching. To develop meaningful learning experiences in the context of distance education, Imbernon, Silva, and Guzman (2011) proposed "lecturers should know, understand, select, use, assess, perfect, recreate or create teaching strategies that are effective in [an online] context" (pp. 108-109). Alternatively, Clinefelter (2012) reported "the skill of presenting a compelling lecture doesn't apply to the online classroom; there, it is replaced with the skill of stimulating student thinking and learning through multiple, short comments" (p. 5). Clinefelter (2012) also reported the instructors' responsibility was to respond to online discussion boards habitually and to inspire, engage, question, and remark on students' work. Historically, Tinto (1975) suggested communication between instructor and student combated student seclusion and provided vital academic support, thus improving persistence rates. As such, online courses were not successful without regular guidance from the instructor. Continual interaction and contact with students helped to further create a sense of learning community and aided in student

engagement. Accordingly, instructors should be interacting every few days and at least provide graded feedback within one week (Clinefelter, 2012).

Student engagement. Gallup (2013) defined student engagement as an individual's interest and enthusiasm for school, related to academic performance and behavior. More specifically, "student engagement is, generally, the extent to which students actively engage by thinking, talking, and interacting with the content of a course, the other students in the course, and the instructor" (Dixson, 2015, p. 2). As such, increased student engagement was related to higher levels of student achievement "characteristics of the instructional design, such as the instructional methods used, the feedback provided, and the degree of learner engagement, create the conditions within which learning occur" (Bell & Federman, 2013, p. 175). Kuh (2009) claimed that engagement was straightforward as "the more students practice and get feedback from faculty and staff members on their writing and collaborative problem solving, the deeper they come to understand what they are learning" (p. 5).

Brown, Rich, and Holtham (2013) found analytics taken from a learning management system measured the extent in which students interacted and accessed the course. This data allowed instructors to reach out to students who seemed to be inactive, thus helping with early academic intervention efforts. Brown et al. (2013) used the learning management system to calculate the number of times students viewed or participated in a discussion to determine the extent of engagement. Dixson (2015) reported two types of behaviors, observation and application, could measure engagement. According to Dixson (2015), observation, or the transfer of information, must occur before application of information happens, and both observation and application could be

accessed via the institution's learning management system. "In the online environment, there are definite opportunities for observational learning (reading posts and content, watching lectures) and for application/interactional learning (posting in response to questions or other posts, taking quizzes, writing papers, etc.)" (p. 7). The application component of Dixson's (2015) theory was closely associated with student assessment and ultimately student achievement in relation to intended course outcomes.

Student engagement in online courses. Online learning had been labeled by many different titles, such as e-learning, distance learning, and virtual learning (Chakraborty & Fredrick, 2014). "Online learning enrollment has been growing at an annual rate of 16.4% from 2002-2014, while the total student enrollment for higher education has increased at an average annual rate of 3.7%" (Mehta, Makani-Lim, Rajan, & Easter, 2017, p. 116). This drastic increase in enrollment led to many scrutinizing the validity of online instruction (Chakraborty & Fredrick, 2014), as well as opposition from faculty who did not wish to teach online (Betts & Heaton, 2014; Hunt et al., 2014). While some argued online courses increased student engagement, others argued student engagement became increasingly difficult in this format. "Online learning has been promoted as being more cost effective and convenient than traditional educational environments as well as providing opportunities for more learners to continue their educations" (Han & Johnson, 2012, p. 69).

Chen, Lambert, and Guidry (2010) identified positive student engagement tactics as "student-faculty interaction, cooperation among students, active learning, prompt feedback, time on task, high expectations and respect for diverse talents" (p. 1222). Similarly, Chakraborty and Fredrick (2014) found principal influences for student

engagement in an online format included creating learning communities, appropriate and timely feedback, and correct use of applicable technology. Real-world-related activities and simulations, coupled with peer collaboration resulted in increased student participation (Boling, Hough, Krinsky, Saleem, & Stevens, 2012). However, by far, the most influential component in online student engagement was found to be teacher-student interaction (Dixson, 2015; Junk, Deringer, & Junk, 2011; Li, Duan, Fu, & Alford, 2012; Mehta et al., 2017; Stott, 2016).

Yang (2011) noted tracking tools measured student engagement; specifically, participation through the Learning Management Systems (LMS). Xie, Miller, and Allison (2013) suggested a social conflict evolution model, which outlined the potential adverse implications to student engagement when a conflict went unresolved or unnoticed within an online community. Xie et al. (2013) further cautioned online instructors to closely monitor discontent within the online learning community and promote regulation. Consistent instructor policing was a necessity in any LMS-hosted online community. Mehta, Makani-Lim, Rajan, & Easter (2017) accentuated the importance of nurturing positive social interaction in addition to cognitive development and creating a community in which learners were prompted to interact with each other.

The capabilities of LMS-provided analytics have improved within the recent years, honing in on interaction specifics, thus furthering early-intervention detection (Agudo-Peregrina, Iglesias-Pradas, Conde-Gonzalez, & Hernandez-Garcia, 2014). However, analytics gathered from LMSs were found to be more representative of assessments than students' actual skills (Saunders & Gale, 2012). Although actively participating in online discussions was an indication of student engagement, research

indicated reading others' posts also involved engagement (Cheng & Chau, 2016). "Online participation can cover a wide range of activities that require students to read, talk, think, feel and/or communicate with others" (Cheng & Chau, 2016, p. 261). Cheng and Chau (2016) also described three types of courses and students' top priorities: information access and interactive learning - interaction with learning resources; networked learning - collaboration with peers; and materials development - student self-reflection. Huang, Lin, and Huang (2012) quantified online student engagement by collecting the number of questions asked, number of replies with a resolution, and number of times other students' questions were viewed. It is important to note Huang et al.'s (2012) study lacked qualitative data.

According to Stott (2016), minimal student engagement resulted in lower academic scores, substandard course evaluations from the students, and ultimately, decreased retention rates for the institution. Additionally, poor student engagement was, in part, a result of improper use of technology by the instructor. Students' lack of computer skills could lead to frustration, thus hindering student motivation in some cases (Chakraborty & Fredrick, 2014). Baker, Bernard, and Dumez-Feroc (2012) found some students, regardless of the level of social media savviness, struggled with shifting the skill set to academia. Swartz (2014) cautioned instructors not to assume students were capable in all areas of technology. Consequently, online faculty had opposing ideologies regarding motivation in an online course compared to an on-ground course (Betts & Heaton, 2014). "Barriers are those factors at the core of resistance to online teaching and may be personal traits, institutional infrastructure, or professional constraints" (McGee, Windes, & Torres, 2017, p. 333).

Boling, Hough, Krinsky, Saleem, and Stevens (2012) found text-based course designs resulted in negative student engagement. Furthermore, well-designed online courses did more than merely publish lectures and assess students over the lecture content (Bennett, Bishop, Dalgarno, Waycott, & Kennedy 2012; Mehta et al., 2017). LMS tools, however, such as video conferencing and synchronous sessions, allowed instructors to positively interact with students (Nagel & Kotze, 2010). James (2016) found gamification techniques, creating a sense of community, students working collaboratively towards a common goal, and incentives like badges, led to improved student engagement. James (2016) also claimed the driving reason for implementation of gaming strategies was to use technology to raise student motivation and participation, which in turn could increase engagement. Mehta et al. (2017) found engaging online courses had instructors who created the learning process, organized the content, implemented interactive strategies, and composed unique assessments. Such courses created a distinctive learning experience, and Clayton, Blumberg, and Auld (2010) proposed students' motivations were directly related to the learning experience. Bell and Federman (2013) applied instructional design skills to online courses, which was reported to help in accessibility standards for all students and increased student interaction and engagement.

Student achievement. Student achievement, or student success, may be directly related to the instructional components implemented within the course. The American Council on Education (ACE) reported teachers "who embrace the most effective teaching practices are more likely to impact the student experience positively, and lead to improved student retention, persistence, and success" (Brown & Kurzweil, 2017, para. 1). Effective teaching practices that directly support increased student achievement were

reported in Hattie's seminal Visible Learning research (2009). Hattie (2009) found feedback given to students, student-teacher rapport, and students' expectations to be among the most influential factors for effective teaching practices. Creating an environment where students received and implemented timely feedback allowed for the greatest student achievement. This allowed students to learn without anxiety related to negative responses from other students and teachers alike. Similar to Hattie's beliefs, Marzano (2011) viewed teaching strategies as tools; the strategy was only effective when implemented strategically within a lesson.

Hattie (2009) cautioned educators not to rely heavily on instructor lecturing; real student learning happened during pauses in speaking which allowed for trial-and-error processing. In a meta-analysis of instructor-student relationships, Cornelius-White and Harbaugh (2010) reported a positive relationship between the instructor's demeanor and student motivation and achievement. According to Hattie (2015), "about 20-25% of the total learning variance is in the hands of teachers," while "50% of the variance in learning is a function of what the student brings to the lecture room or classroom" (p. 87).

Hattie (2015) also summarized 17 meta-analyses which compared on-campus courses to online courses, thus concluding that the delivery method was ultimately insignificant, with an effect-size of $d = .12$ (2015, p. 86). More influential than mode of delivery was the quality and frequency of peer-to-peer interactions and instructor-student interactions (Hattie, 2015).

In the context of distance education, student achievement may also relate to student activity within the course. According to Bell and Federman (2013), "Because instructional methods that facilitate active engagement enhance learning, differences in

achievement may be attributable to differences in activity level rather than in the delivery media per se" (p. 171). Huang et al. (2012) found increased student participation, whether active or passive, led to increased exam scores. Calafiore and Damianov (2011) cautioned time spent online was only quantitative, disregarding the time spent reading or studying offline, and reported that "time has the greatest impact on the odds of passing versus failing and the least impact on the ratio of A versus lower grades" (p. 210). According to Cheng and Chau (2016), "to date, it remains unclear whether a connection exists between learning styles, online participation and learning achievement" (p. 259).

Student achievement may also be influenced by teacher-student and student-student interaction. Based on 74 effect sizes drawn from 74 studies, Bell and Federman (2013) found "programs offering moderate to high levels of interaction had better achievement outcomes than those offering less interaction" (p. 176). They also reported programs that incorporated student-student or student-content interaction led to better achievement than those limited to student-teacher interaction.

In a meta-analysis designed to produce a statistical synthesis of studies contrasting learning outcomes for either fully online or blended learning conditions with those of face-to-face classroom instruction (the number of learners in the 45 studies included in the meta-analysis ranged from 16 to 1,857), Means, Toyama, Murphy, and Baki (2013) reported students in online learning conditions performed modestly better than those receiving face-to-face instruction. The advantage over face-to-face classes was significant in those studies contrasting blended [or hybrid] learning with traditional face-to-face instruction, but not in those studies contrasting purely online with face-to-face conditions.

Student satisfaction. According to Bitner and Hubbert (1994), student satisfaction was the level of dissatisfaction or satisfaction based on all encounters and experiences. To collect student satisfaction data, many higher education organizations conducted nation-wide surveys (Senior, Moores, & Burgess, 2017). In the United States, a primary survey for gauging student satisfaction was the National Survey for Student Engagement (Kuh, 2003). Although national surveys offered a vast collection of data, Yorke, Orr, and Blair (2014) questioned the validity of the instrument.

Key indicators of student satisfaction included quality of teaching and the reputation of the institution (Alves & Raposo, 2007; Clemes, Gan, & Kao, 2008; Senior et al., 2017). Clark (2010), as well as Galbraith, Merrill, and Kline (2012) found no correlation between student satisfaction and student learning outcomes. Mathooko & Ogutu (2015) cautioned higher education administrators that poor teaching quality could lead to unsatisfied customers. Patrick (2011) found student achievement was not a key indicator of student satisfaction, and Senior, Moores**,** and Burgess (2017) advised institutions against depending solely on high quality teaching to keep students satisfied. Griffin, Hilton, Plummer, and Barret (2014) found an overall correlation between student achievement and student evaluations. There was no correlation, however, between specific courses and/or instructors.

Barriers to student achievement, engagement, and satisfaction. Online student demographics were often synonymous with non-traditional student demographics (Friedman, 2017). These students had outside responsibilities, which made it more difficult to focus on their education (Xu & Jaggars, 2013). Jaggars (2011) reported that flexibility in online courses allowed students to study on an optimal individual schedule.

According to Travers (2016), the flexibility online coursework offered was essential for the busy schedules of non-traditional students. Travers (2016) also reported a large number of non-traditional students may be ill-equipped to handle online courses and suggested online courses offered a safe space for students to transition into higher education. Moss, Kelcey, and Showers (2014) found almost half of freshman online students were academically underprepared for the rigor of online courses. Community College Research Center (2013) found students who took online courses during the first term of study had a lower likelihood of continuing, and the more online courses taken, the lower the odds of graduating. Xu and Jaggars (2013) found online student retention rates to be much lower than those of on-campus students, although student achievement levels were similar. Among several higher education institutions, low online persistence rates spawned further research into online learner completion rates (Shea & Bidjerano, 2014). According to Travers (2016), "several factors appear to influence attrition in online courses, including time commitment, a lack of feeling of community, and the lack of student preparedness for college-level work" (p. 52). Other factors associated with attrition included technology requirements, not enough course structure, and lack of student community (Jaggars, 2011). According to Shea and Bidjerano (2014), although online courses had lower completion rates, students still benefited from the opportunities which online learning afforded.

To counter barriers to success for online students, Britto and Rush (2013) claimed that structuring a supportive environment helped to promote self-motivation and connectedness to an institutional community. According to Travers (2016), "distance education courses should integrate a process that orients and evaluates distance learners

prior to the beginning of the course, uses an instructional design system based on a learner-centered approach . . . and provides distance learners with the necessary academic supports" (p. 58), as well as access to 24/7 technology support. Simonson, Smaldino, and Zvacek (2015) suggested that student support services should be offered online, as well as on-campus. Lee and Choi (2011) outlined ways to decrease online student attrition, including "understanding of each student's challenges and potential, providing quality course activities and well-structured supports, and handling environmental issues and emotional challenges" (p. 610).

Methods of Evaluating Teaching

The literature was rich in studies focused on the evaluation of teaching effectiveness, including findings associated with course evaluations, peer evaluation, self-evaluation, and the use of checklists, rubrics, and inventories.

Student course evaluations. Many institutions used student evaluations as one component of faculty evaluation despite their history of controversy and concerns about validity (Drew & Klopper, 2014). According to Marsh (2007), student ratings reflected various raters across various class sections and were the most reliable, single measure of teaching effectiveness. In contrast, Drew and Klopper (2014) reported that "in many cases . . . student data alone is not rich enough to identify or justify particular development actions nor timely enough to benefit current students" p. 350). Similarly, Benton, and Cashin (2014) cautioned against student ratings as evaluations and viewed the evaluations as data collection.

Many studies found the timing of student evaluations played an influential role in outcomes and reported that students completed evaluations at the end of the term. Vasey

and Carroll (2014) found that instructors feared students who viewed their final grade before submitting the course evaluation, claiming that evaluations submitted prior to the final grade may be influenced by the anxiety of the upcoming exams. To address this concern, Hammer et al. (2010) proposed that student evaluations should be administered by a neutral party, administered two to three weeks prior to the end of the term, and instructors did not get access until after final grades were submitted.

In order to evaluate instructors fairly, student evaluations needed to be identical from course to course, and training for students and instructors should be made available (Hammer et al., 2010). Another point of consideration was the frequency in which student evaluations were conducted. Hoyt and Pallett (1999) believed students should be provided a minimum of one opportunity to share feedback regarding instruction. This information, coupled with supplementary documentation, allowed administration to evaluate instructors accordingly. According to Hammer et al. (2010), selecting a random sample of students to complete course evaluations helped to avoid survey fatigue. Alternatively, Hoyt and Pallett (1999) claimed that all students should be provided at least one opportunity during a semester to provide input about the quality of their learning experiences.

The relationship between student course evaluations, grades, and perspectives was also investigated. According to Vasey and Carroll (2014), faculty received the highest number of written responses on end of course evaluations from students who were either very pleased or extremely displeased with their grades. Thus, faculty and administration could argue its legitimacy and fairness since polarized data misrepresented the students at large. According to Guvendir (2014), in addition to the lack of training for students on

how to complete course evaluations, several studies reported that student course evaluations may be biased, as they were influenced by the instructor's appearance and grade leniency.

Although student course evaluations were a widespread component of faculty evaluations, researchers cautioned that evaluations should not be the primary or singular form of assessment. Hoyt and Pallett (1999) claimed that student ratings were only one source of data and should be combined with additional evidence, so that administrators could make informed judgments about teaching quality. Similarly, Hammer et al. (2010) suggested that course evaluations could be supplemented with peer reviews and teaching portfolios to evaluate instructor effectiveness.

Peer evaluations. Due to inconsistencies with student evaluations, peer evaluations, combined with other methods of instructor assessment, gained momentum in higher education (Iqbal, 2014). Benton and Cashin (2014), reported the culmination of multiple forms of evaluation data, i.e. peer evaluation, student evaluation, etc. was used to strengthen the evaluation process for non-tenured faculty. Servilio, Hollingshead, and Hott (2017) found that peer evaluations generally consisted of more experienced or tenured faculty evaluating newer faculty in higher education. Other researchers, however, argued this may not be representative of best practice. Peer to peer observations involving newer faculty were found to be just as impactful as matching newer faculty with more experienced instructors (Lumpkin, 2011).

Peer review was often comprised of curriculum evaluation, analysis of instructional assessments, and classroom observations (Servilio, Hollingshead, & Hott, 2017). Many peer reviews also required a collaborative component, which proved to be

useful. According to Knowlton, Fogleman, Reichsman, and de Oliveira (2015), reflection combined with collaboration allowed a high level of learning to transpire. Furthermore, through constructive criticism, cooperative environments, and reflection, instructors may gain a better understanding of high-impact instructional practices (Thomas, Abraham, Raj, & Beh, 2014).

As a byproduct of increased communication between peers, institutional departments reported a rise in collaboration among faculty. Peer evaluation models may lead to enhanced collaboration within departments and help to build professional rapport among faculty (Servilio et al., 2017), and Carbone et al. (2015) found that instructors achieved positive results by reflecting collaboratively with a peer. In the Carbone et al. (2015) study, participants met with a peer throughout the term to complete a series of predetermined, structured exercises. Through this practice, instructors worked on areas to improve, which ultimately led to improved student evaluation scores. Servilio et al. (2017) suggested that peer evaluations should involve academic administrators throughout the process as a resource and guide.

Formative and summative peer reviews have also been investigated. Bell and Cooper (2013) found that formative peer reviews were more beneficial than summative peer reviews, because instructors had time to implement and assess changes. Iqbal (2014) found that summative peer assessments lacked constructive feedback from faculty and nurtured discontent between faculty members.

Self-evaluations. Self-evaluation was the contribution of instructors recognizing teaching standards and assessing themselves according to the extent in which the criteria were covered (Duarte Clemente & Ferrandiz-Vindel, 2012). Kyrgiridis, Derri,

Emmanouilidou, Chlapoutaki, and Kioumourtzoglou (2014) found self-evaluations allowed instructors to take the steps necessary to improve teaching. According to Duarte Clemente and Ferrandiz-Vindel (2012), formative assessment coupled with self-evaluation, allowed for the biggest professional growth in teaching. Self-assessment allowed instructors to understand personal limitations, as well as professional potential. Such knowledge allowed for pedagogical growth.

Checklists, rubrics, and inventories. Student learning outcomes improved when instructors implemented research-based practices (Hoellwarth & Moelter, 2011; Porter, Lee, & Simon, 2013). To this end, checklists, rubrics, and inventories were tools for evaluating course quality for both teachers and learners (Allen & Tanner, 2006). Wieman and Gilbert (2014) developed and tested a "teaching practices inventory" (p.553) to guide evaluation and improvement of course design and delivery in on-campus undergraduate biology, computer science, earth sciences, mathematics, physics, and statistics (STEM) courses. Wieman and Gilbert (2014) claimed self-reported inventories allowed instructors to view their strengths and weaknesses and determine which instructional practices were most effective. Wieman and Gilbert (2014) also studied the teaching practices inventory at the departmental level and discovered circumstantial benefits, such as looking at the program standards to ensure consistency throughout the course offerings.

Roblyer and Wiencke (2003) used a rubric to examine observable, measurable interactive qualities in distance education courses to enhance achievement and student satisfaction. Subject matter experts and sample distance education courses, looking at reliability, validity, comprehensiveness, and unambiguity, vetted the rubric. According to Taggart, Phifer, Nixon, and Wood (2001), rubric reliability rises with training prior to

implementation. The results of Roblyer and Wiencke's (2003) research showed consistency in scores, both holistically and individually. Additionally, rubric scores correlated, as expected, with student satisfaction from end-of-course evaluations.

Substantial research was also conducted on the application of Maryland Online's Quality Matters (QM) Rubric (Legon & Runyon, 2007). The objective of the QM Rubric was to create "inter-institutional quality assurance and course improvements in online learning" (QM, 2013a, para. 1). The QM Rubric was designed to implement quality assurance in online course design by instituting data-driven instructional practices (Ralston-Berg, 2014). The QM Rubric consisted of 42 individual standards for course design. The Rubric did not, however, assess quality of instruction. In Crews and Wilkinson's (2015) study of quality teaching and the QM Rubric, alignment between Chickering and Gamson's seven principles for good practice in undergraduate education were found in all of the QM standards. According to Piña and Bohn (2014), the master course model was becoming progressively more popular. Consequently, it was increasingly common for instructors to be teaching a course that they themselves did not develop. Accordingly, evaluative rubrics, such as the QM Rubric, would be an unfair and unreflective assessment of their course and/or teaching (Piña and Bohn, 2014).

Professional Development

According to Baran and Correia (2014), a strong correlation existed between the quality of online programs in post-secondary education and professional development approaches tailored to the needs of online teachers. Windes and Lesht (2014) found available support services to be a key indicator in instructor outlook for online learning. Although most higher education faculty and instructors were subject matter experts,

many lacked knowledge in pedagogy necessary to be effective teachers (Dysart & Weckerle, 2015; Postareff, Lindblom-Ylanne, & Nevgi, 2007). Torrisi-Steele and Drew (2013) found the lack of digital fluency ultimately hindered the student learning experience. In many institutions of higher education, subject matter experts were not offered formal training on pedagogical practices preceding the start of their teaching careers (Koehler, Mishra, Kereluik, Shin, & Graham, 2014). This omission proliferated instructional strategies based exclusively on experience, regardless of whether the strategies were effective or not (Fink & Fink, 2009). According to Dysart and Weckerle (2015), "while many institutions provided centralized technology support for faculty, there was a lack of centralized professional development opportunities that focus on simultaneously developing online instructors' technological, pedagogical, and content knowledge in higher education" (p. 255). According to Fink (2013), "no matter how much one might know about teaching or even about a specific aspect of teaching such as designing courses, it is always possible to learn even more and get even better" (p. 102). Thus, if institutions were responsible for providing a quality learning experience for online students, institutions played a vital role in professional development initiatives to cultivate instructional expertise. As reported by Regier (2014),

> traditional faculty can be aided in online engagement and support through appropriate training and assistance (p. 78) . . . What is generally not appreciated is how vastly different teaching online is in comparison with teaching face-to-face. Left to their own devices, faculty making the transition to online delivery typically will approach an online course in the same way [they approach on-campus courses] (p. 80).

Ongoing engagement in professional developmental activities, such as attending workshops, reading then-current literature, and collaborating with associates, could lead faculty to publish articles, present to other colleagues, and find newfound joy, passion, and effectiveness in teaching (Fink & Fink, 2009). Growth in pedagogical skills may also lead to advancement, innovation, and evolution, both personally and collectively within a department or institution (Ferrandiz, 2011; Duarte Clemente & Ferrandiz-Vindel, 2012). Professional development initiatives have also been found "to help people explore and develop their own teaching philosophy, to develop new practices and to share and learn from others" (Williams, Nixon, Hennessy, Mahon, & Adams, 2016, p. 1).

Inconsistencies in professional development. Despite the potential of professional development opportunities to support effective teaching, researchers also found professional development initiatives to be inconsistent. According to Dysart and Weckerle (2015), many institutions struggled to provide quality technology-related professional development. Dahlstrom (2015) found only a small number of higher education institutions offered centralized teaching support specific to technology. Dahlstrom (2015) also found very few institutions implemented professional development opportunities in which technology was aligned with high impact teaching strategies. Koehler, Mishra, Kereluik, Shin, & Graham (2014) found then-current professional development offerings consisted of technology skills, but lacked meaningful connections to subject matter.

Methods of professional development. McDowell, Bedford, and DiTommaso Downs (2014) reported a variety of professional development opportunities could be implemented to meet the needs of faculty. These opportunities included asynchronous

modules, in-person workshops, individual assistance, small group mentoring, webinars, and new faculty orientations assisted in the advancement of teaching excellence. According to Pelch & McConnell (2016), professional development should be rigorous and provide collaboration with colleagues. Collaborative professional development opportunities led to the adoption of data-driven teaching strategies (Henderson, Dancy, & Niewiadomska-Bugaj, 2012; Wieman, Perkins, & Gilbert, 2010). Avalos (2011) claimed professional development initiatives should not only involve intellectual effort, but also emotional contribution. According to McGee et al. (2017), "professional development should offer opportunities for faculty to encounter increasingly complex situations in training programs through such strategies such as case studies, problem solving, and challenges that allow novices to put learning into context" (p. 334).

According to Dysart and Weckerle (2015), professional development should include a variety of opportunities for instructors to experience learning from technological tools and pedagogical strategies in tandem — "to fully experience the constraints and affordances of each" (p. 259). Similarly, Grajek and Rotman (2014) reported the need for instructors to cultivate technological skills, as well as pedagogical skills was evident. Dysart and Weckerle (2015) claimed that workshops offered a contextualized environment in which significant and applicable activities could be delivered. These researchers also observed that presenters of professional development workshops, many of which were instructional designers, often lacked content-specific knowledge. Koehler et al. (2014) reported this shortcoming led most workshops to focus on technological aids for pedagogical practice instead of integrating technology to the subject-matter content. Such practices resulted in instructors unsuccessfully attempting to

implement new strategies on their own (Dysart & Weckerle, 2015). Schlager & Fusco (2003) reported that universities rarely had the means to provide ongoing support for instructors to implement new pedagogical initiatives. As a potential solution to this challenge, Dysart and Weckerle (2015) recommended that post-mortem communities of practice could provide a support system to assist instructors throughout the term. Communities of practice allowed for veteran instructors to collaborate and relate experiences to less-experienced instructors, furthering the application of online teaching principles (Boud, Cohen, & Sampson, 2014; McGee, 2014; McGee et al., 2017).

Professional development opportunities rooted in institutional competencies were also reported to be a means of regulating the quality of online instruction (Arinto, 2013; Farmer & Ramsdale, 2016). According to McGee et al. (2017), "competencies have been identified and articulated by non-profit and for-profit institutions/organizations, scholars, and institutions as a strategy to codify quality and offer training and supports" (p. 332). Further, "competencies help to address barriers in that they operationalize outcomes of proficiency and thus make it clear what can be done to become competent" (p. 333). Similarly, Bonura, Bissell, and Liljegren (2012) observed that professional development offerings needed to be timely and applicable to teaching standards. According to Benton and Li (2016), judging teaching effectiveness required standards-based comparison. Such comparison "provides feedback about how an instructor performs relative to others and about areas that need improvement" (Benton & Li, 2016, p. 2).

Mentoring and coaching. As a means of professional development, mentoring and coaching were the focus of study by several researchers. According to Lyons and Pastore (2016), in most professional mentoring scenarios, the mentor provided on-the-job

training to a specified mentee, engaged in consistent communication, and demonstrated optimal ways to conduct certain job responsibilities. Specific to teaching, mentoring could be used to achieve instructional goals and conquer related hurdles in an attempt to improve educational practices (Czajka & McConnell, 2016). In higher education, mentoring was found to support instructors when the designated mentor had been formally trained and experienced (Christie, 2014; Lyons & Pastore, 2016). According to Ambler, Harvey, and Cahir (2016), mentoring helped to build professional relationships and friendships, developed personal satisfaction, and expanded understandings of teaching and research. As a consequence of engaging in self-reflection, mentoring also introduced instructors to new ways of thinking about their work. "Individuals who receive adequate mentoring have greater satisfaction in the workplace and clearer direction for scholarly endeavors, while organizations benefit from enhanced retention and recruitment; these effects culminate in a richer learning environment for students" (Sheridan, Hubbard Murdoch, & Harder, 2015, p. 424). According to Harvey, Ambler, and Cahir (2016), benefits to mentoring included increased knowledge and personal and professional gain for both mentor and mentee.

Mentoring was not free from challenges. Harvey et al. (2016) found mentoring to be time consuming and in some cases did not meet the essential needs of mentees. Due to geographical restraints, some online instructors could not participate in optional or required institutional mentoring programs (Pachler & Redondo, 2012). Dziczowski (2013) found most mentor-mentee relationships were unsustainable due to poor training, poor partner pairings, and lack of time management skills. Pachler and Redondo (2012) believed the primary benefit of virtual mentoring was the increased access to resources

for instructors. Cochrane and Rhodes (2013) found mentoring through social media was easily accessible for instructors and had the ability to be widely used on multiple devices. Adversely, any type of e-mentoring or distance mentoring required the mentor and mentee to have additional technical abilities aside from face-to-face mentorship skills (Owen, 2015).

Pappas and Jerman (2015) noted a "considerable overlap between coaching, counseling, therapy, and mentoring" (p. 80). Comparatively, the International Coach Federation (2012) found 38% of people surveyed did not understand the difference between coaching and mentoring. "Refinements are needed in defining what coaching is, how it is to be carried out, and by whom it should be carried out" (Pappas & Jerman, 2015, p. 90). Brock (2010) defined coaching as a "dynamic and contextual mutual-learning process that fosters self-awareness, attention to behaviors, personal growth, and conscious choice for the highest good" (p. 16).

McDowell et al. (2014) believed peer coaching should be individualized, not used for evaluation purposes, and confidential. Passmore and Rehman (2012) found coaching enabled the instructors to learn information faster than other forms of professional development. Coaching strategies were implemented at the higher education level for years; however, most were not branded as coaching (Denton & Hasbrouch, 2013). Such coaching interactions were most optimal when fueled with positive reinforcement (Payne & Dozier, 2013). Peer coaching delivered realistic application, training, and "sustained assistance" (Dysart & Weckerle, 2015, p. 261).

Coaching often-included post-mortem reflection and follow-up focused solely on student learning outcomes (Stover, Kissel, Haag, & Shoniker, 2011). Coaching was also

found to provide more than just pedagogical assistance. Peer-to-peer relationship afforded faculty with an opportunity to emphasize and share expert knowledge, all within a confidential capacity (McDowell, Bedford, and DiTommaso Downs, 2014). The International Coach Federation (2012) reported coaching empowered employees and resulted in more self-directed actions. Other noted improvements included increased relationships, teamwork, job fulfillment, and quality (Pagliarini, 2011). Pappas and Jerman (2015) believed coaching could be a human resource selling point to new faculty, similar to other benefits, and such offerings allowed institutions to maintain high quality instructors.

According to Pappas and Jerman (2015), the traditional role of academic advisors shifted from traditional advising to a coaching model. The change may have resulted from higher education attrition rates rising due to students' unforeseen obstacles, such as health or financial hardships (Inside Track, 2012). Institutions, such as Pennsylvania State University and the University of California — Los Angeles transitioned to advisors as coaches to meet the needs of nontraditional students (Pappas & Jerman, 2015).

Mulig and Rhame (2012) highlighted issues specific to online teaching, including differences between teaching in online and face-to-face modalities. Further, McDowell et al. (2014) explained, "Different does not necessarily mean difficult" (p. 6). Walden University implemented an orientation for new faculty targeting time management skills, discussions on student engagement, and institutional performance standards (McDowell et al., 2014). Although instructors benefited from this program, coaching was implemented to fill in the gaps and meet the individual instructor's needs (McDowell et al., 2014). Correspondingly, Cox (2012) reported the necessity for institutional culture to

be receptive to coaching. Kretlow and Bartholomew (2010) and Parker, Kram, and Hall (2014), recommended that low-cost/high-impact coaching augmented the application of data-driven, evidence-based teaching practices.

Although mentoring proved to be highly beneficial (Garvey, Stokes, & Megginson, 2014), the sensitive and co-dependent nature of mentoring emphasized the importance of pairing a mentor and mentee. In some cases, poor pairings proved to be catastrophic (Burk & Eby, 2010); self-mentoring practices minimized the conflict (Bond & Hargreaves, 2014; Carr, Pastor, Levesque, 2015). Self-mentoring required self-motivation, initiative, and a desire to strengthen pedagogical skills (Bond & Hargreaves, 2014; Carr et al., 2015). Based on self-leadership theory (Carr et al., 2015), Bond and Hargreaves (2014) reported self-mentoring held the structure necessary for leaders to reach full potential. Self-mentoring may also lead to increased self-efficacy (Bond & Hargreaves, 2014).

Summary

Upon review of the existing body of literature, there are many indicators of effective teaching, including student engagement, achievement, and satisfaction. Syllabus design -- a common denominator among all courses -- can support these outcomes. There are also many methods of evaluating effective teaching. One of these methods is the use of inventories, which can serve instructive, evaluative, and comparative purposes. The literature review also revealed a gap in research that explores relationships between syllabus design and outcomes in online courses.

Chapter Three: Methodology

The current study was designed to determine if using an evidence-based OSI to revise and/or refine online courses resulted in increased student engagement, achievement, and satisfaction. This study was also designed to determine whether using the OSI influenced faculty instruction and satisfaction.

Chapter Three details the contexts of the study, methodologies and procedures implemented in the study, and measures to ensure validity and reliability.

Study Location

The study took place at a private Midwest university accredited by the Higher Learning Commission. The university offered more than 120 undergraduate and graduate degree programs, including 31 fully online degree programs. Representing 49 states and more than 70 countries, enrollment included approximately 10,000 students in online, traditional day, graduate, and non-traditional programs.

Research Instrument

To achieve the purposes of this study, and following the work of Wieman and Gilbert (2014), a weighted and evidence-based OSI (see Table 1 and Appendix A) was developed and served as the independent variable. The evidence-based practices incorporated into the OSI were derived from standards prescribed in the Quality Matters (QM) *Higher Education Rubric* (5th ed.) (Maryland Online, 2014) and influences reported to have a high-effect on student achievement through meta-analytic research (Hattie, 2009, 2012, 2015, 2017).

Consisting of 11 sections, alignments between the OSI and QM rubric were as follows:

OSI Section 1. Course

OSI sub-section 1.3 — information about how to access the course in [LMS], the dates that access begins and ends, and how to get started—aligned with QM 1.1, "Instructions make clear how to get started and where to find various course components" (p. 1).

OSI sub-section 1.4 — course description, as found in the then-current undergraduate or graduate catalog, including prerequisites and co-requisites — aligned with QM 1.2, "Learners are introduced to the purpose and structure of the course" (p. 1) and QM 1.6, "Prerequisite knowledge in the discipline and/or any required competencies are clearly stated" (p. 1).

OSI sub-section 1.5 — reference to corresponding teacher certification requirements, if applicable — aligned with QM 1.2, "Learners are introduced to the purpose and structure of the course" (p. 1).

OSI Section 2. Instructor

OSI sub-section 2.2 — an up-to-date biography, including academic and professional credentials — aligns with QM 1.8, "The self-introduction by the instructor is appropriate and is available online" (p. 1).

OSI sub-section 2.4 — comprehensive information about how the instructor will be present and responsive throughout the course — aligned with QM 5.2, "Learning activities provide opportunities for interaction that support active learning" and QM 5.3, "The instructor's plan for classroom response time and feedback on assignments is clearly stated" (p. 1).

OSI Section 3. Learning Intentions

OSI sub-section 3.1 — intended course learning outcomes and connections to corresponding program learning outcomes and institutional learning outcomes, if applicable — aligned with QM 2.1, "The course learning objectives, or course/program competencies, describe outcomes that are measurable," QM 2.3, "All learning objectives or competencies are stated clearly and written from the learner's perspective," and QM 2.5, "The learning objectives or competencies are suited to the level of the course" (p. 1).

OSI Section 4. Grading

OSI sub-section 4.1 — the method for determining the final grade — aligned with QM 3.2, "The course grading policy is stated clearly" (p. 1).

OSI sub-section 4.2 — information about late and missing assignments, including impact on the final grade — aligned with QM 3.2, "The course grading policy is stated clearly" (p. 1).

OSI Section 5. Policies and Requirements

OSI sub-section 5.1 — statement regarding policies and procedures that apply to all courses at [research site] — aligned with QM 1.3, "Etiquette expectations (sometimes called 'netiquette') for online discussions, email, and other forms of communication are clearly stated" (p. 1), QM 1.4, "Course and/or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided" (p. 1).

OSI sub-section 5.2 — information about course-specific measures to support academic honesty — aligned with QM 1.4, "Course and/or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided" (p. 1).

OSI sub-section 5.3 — statement regarding initial student attendance in an online course — aligned with QM 1.4, "Course and/or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided" (p. 1).

OSI sub-section 5.4 — information about each required text, including title, author(s), publisher, edition, ISBN-13, cost, and procurement, if applicable — aligned with QM 4.4, "The instructional materials are current," and QM 4.5, "A variety of instructional materials is used in the course" (p. 1).

OSI sub-section 5.5 — information about required materials/supplies, including cost and procurement — aligns with QM 4.4, "The instructional materials are current" and QM 4.5, "A variety of instructional materials is used in the course" (p. 1).

OSI sub-section 5.6 — a clear distinction between required and optional/recommended materials — aligneds with QM 4.6, "The distinction between required and optional materials is clearly explained" (p. 1).

OSI sub-section 5.8 — requirements for student-student interaction (such as group work, group projects, peer reviews, or synchronous activities), if applicable — aligned with QM 5.2, "Learning activities provide opportunities for interaction that support active learning" and QM 5.4, "The requirements for learner interaction are clearly stated" (p. 1).

OSI sub-section 5.9 — provided information about the required writing style (MLA, APA, Chicago, etc.), if applicable — aligns with QM 1.4, "Course and/or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided" (p. 1).

OSI Section 6. Technology and Authentication

OSI sub-section 6.1 — statement regarding minimum hardware and software requirements applicable to all courses at [research site] — aligned with QM 1.5, "Minimum technology requirements are clearly stated and instructions for use provided" (p. 1).

OSI sub-section 6.2 — information about required course-specific technology (including version/release, cost, procurement, and privacy) and prerequisite minimum use requirements, if applicable — aligned with QM 1.5, "Minimum technology requirements are clearly stated and instructions for use provided" (p. 1), QM 1.7, "Minimum technical skills expected of the learner are clearly stated" (p. 1), QM 6.1, "The tools used in the course support the learning objectives and competencies" (p. 1), QM 6.3, "Technologies required in the course are readily obtainable" (p. 1), QM 6.4 "The course technologies are current" (p. 1), and QM 6.5, "Links are provided to privacy policies for all external tools required in the course" (p. 1).

OSI sub-section 6.3 — institutional information and links regarding student authentication and privacy — aligned with QM 1.4, "Course and/or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided" (p. 1), QM 1.9, "Learners are asked to introduce themselves to the class" (p. 1), and QM 6.5, "Links are provided to privacy policies for all external tools required in the course" (p. 1).

OSI sub-section 6.4 — detailed information about course-specific authentication measures and corresponding safeguards to protect student privacy, cost (if applicable), and help resources—aligned with QM 1.4, "Course and/or institutional policies with

which the learner is expected to comply are clearly stated, or a link to current policies is provided" and QM 6.5, "Links are provided to privacy policies for all external tools required in the course" (p. 1).

OSI Section 7. Student Support Services and Resources

OSI sub-section 7.1 — statements regarding institutional academic, technical, and LMS support services and resources — aligned with QM 7.1, "The course instructions articulate or link to a clear description of the technical support offered and how to obtain it" (p. 1), QM 7.3, "Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them" (p. 1), and QM 7.4, "Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them" (p. 1).

OSI Section 8. Course Schedule

OSI sub-section 8.1 — a course schedule that integrates a timeline or sequence of course modules, including but not limited to an Orientation Module, Content Modules, and a Concluding Module — aligned with QM 1.1, "Instructions make clear how to get started and where to find various course components" (p. 1), QM 1.2, "Learners are introduced to the purpose and structure of the course" (p. 1), and QM 1.4, "Course and/or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided" (p. 1).

OSI sub-section 8.2 — a course schedule that integrates learning intentions for each course module — aligned with QM 2.2, "The module/unit learning objectives or competencies describe outcomes that are measurable and consistent with the course-level

objectives or competencies" (p. 1) and QM 2.3, "All learning objectives or competencies are stated clearly and written from the learner's perspective" (p. 1).

OSI sub-section 8.3 — a course schedule that integrates readings, viewings, activities, experiences, and/or resources for learning — aligned with QM 2.4, "The relationship between learning objectives or competencies and course activities is clearly stated" (p. 1), QM 4.1, "The instructional materials contribute to the achievement of the stated course and module/unit learning objectives or competencies" (p. 1), QM 4.2, "Both the purpose of instructional materials and how the materials are to be used for learning activities are clearly explained" (p. 1), and QM 5.1, "The learning activities promote the achievement of the stated learning objectives or competencies" (p. 1).

OSI sub-section 8.4 — a course schedule that integrates assignments and quizzes (assessments)--multiple opportunities for students to demonstrate and monitor/evaluate their learning with corresponding grading criteria, points, weights, and/or standards — aligned with QM 3.1, "The assessments measure the stated learning objectives or competencies" (p. 1), QM 3.3, "Specific and descriptive criteria are provided for the evaluation of learners' work and are tied to the course grading policy" (p. 1), QM 3.4, "The assessment instruments selected are sequenced, varied, and suited to the learner work being assessed" (p. 1), QM 3.5, "The course provides learners with multiple opportunities to track their learning progress" (p. 1), QM 5.2, "Learning activities provide opportunities for interaction that support active learning," and QM 6.2, "Course tools promote learner engagement and active learning" (p. 1).

OSI Section 9. References and Copyright

Sub-section 9.1 — a reference list of course materials that are cited in the style appropriate to the discipline — aligned with QM 4.3, "All instructional materials used in the course are appropriately cited" (p. 1), QM 4.4, "The instructional materials are current" (p. 1), and QM 4.5, "A variety of instructional materials is used in the course" (p. 1).

OSI Section 11. Changes

OSI sub-section 11.1 —statement regarding the course syllabus is subject to change if the instructor deemed it necessary in order to accomplish the course objectives — aligned with QM 1.4, "Course and/or institutional policies with which the learner is expected to comply are clearly stated, or a link to current policies is provided" (p. 1).

As illustrated in Table 1, indicators within the OSI were weighted based on their relationship to high-effect influences reported by Hattie (2017); the higher the effect size, the greater the weight.

Table 1

OSI Sections and Corresponding Weights

Section	Weight
1. Course Information	5%
2. Instructor Information	10%
3. Learning Intentions	5%
4. Grading	2%
5. Policies and Requirements	12%
6. Technology and Authentication	10%
7. Student Support Services and Resources	10%
8. Course Schedule	40%
9. References and Copyright	3%
10. Special	2%
11. Changes	1%

Consisting of 37 'Yes,' 'No,' or 'Not Applicable' questions, the OSI was an objective tool for evaluating syllabi/course design. Completing the OSI required users to

consider and assess the inclusion of evidence-based practices for online course design and delivery, as well as information required by the Midwestern university at which the study was conducted (e.g., including course descriptions exactly as they are found in the current catalog).

In addition to being evaluative, the OSI was instructive; it served as a means of professional development. By completing the OSI, faculty new to online teaching were introduced to evidence-based practices. For experienced online faculty, weighted indicators introduced or reinforced the importance of certain evidence-based practices (e.g., feedback).

Population

The population for this study was all full-time and adjunct faculty who were scheduled to teach an online course in the summer or fall 2017 term and who also taught the same course within the last calendar year. There were 60 full-time and adjunct faculty who met these criteria.

Sample

To establish the sample for this study, the researcher contacted the population via email and invited them to participate in the study.

Participants. Of the 60 instructors contacted, half responded to the invitation and 14 agreed to participate. Reasons for not participating included unwillingness to change the course syllabus, disinterest in participating without honorarium, and inability to dedicate the time needed to participate. All participants signed consent agreements to participate in the study. Of the 14 participants, eight had terminal degrees, 12 were

female, and two were male. Each of the participants had experience teaching the course included in this study in an online format.

Courses. The sample of courses represented five academic schools. As illustrated in Table 2, nine of the 14 courses were undergraduate at various 10000-30000 levels, five courses were graduate/master's level, and six of the courses were offered for general education credit. All other courses were offered as part of a major degree program.

Table 2

Demographics of the Course Sample

Course	10000	20000	30000	50000	General Education Course
1a, 1b				X	
2a, 2b		X			
3a, 3b	X				X
4a, 4b			X		
5a, 5b	X				X
6a, 6b				X	
7a, 7b	X				X
8a, 8b	X				X
9a, 9b			X		
10a, 10b				X	
11a, 11b			X		X
12a, 12b				X	
13a, 13b				X	
14a, 14b	X				X

As illustrated in Table 3, term lengths of the course sample ranged from four weeks to 16 weeks.

Table 3

Term Lengths of the Course Sample

Course	Number of Weeks in Term	Course	Number of Weeks in Term
1a	12	1b	12
2a	4	2b	6
3a	16	3b	6
4a	6	4b	6
5a	16	5b	16
6a	16	6b	16
7a	6	7b	16
8a	10	8b	10
9a	16	9b	16
10a	16	10b	16
11a	8	11b	16
12a	8	12b	16
13a	8	13b	8
14a	16	14b	8

As illustrated in Figure 1, student enrollments in the sample of courses ranged from two to 24.

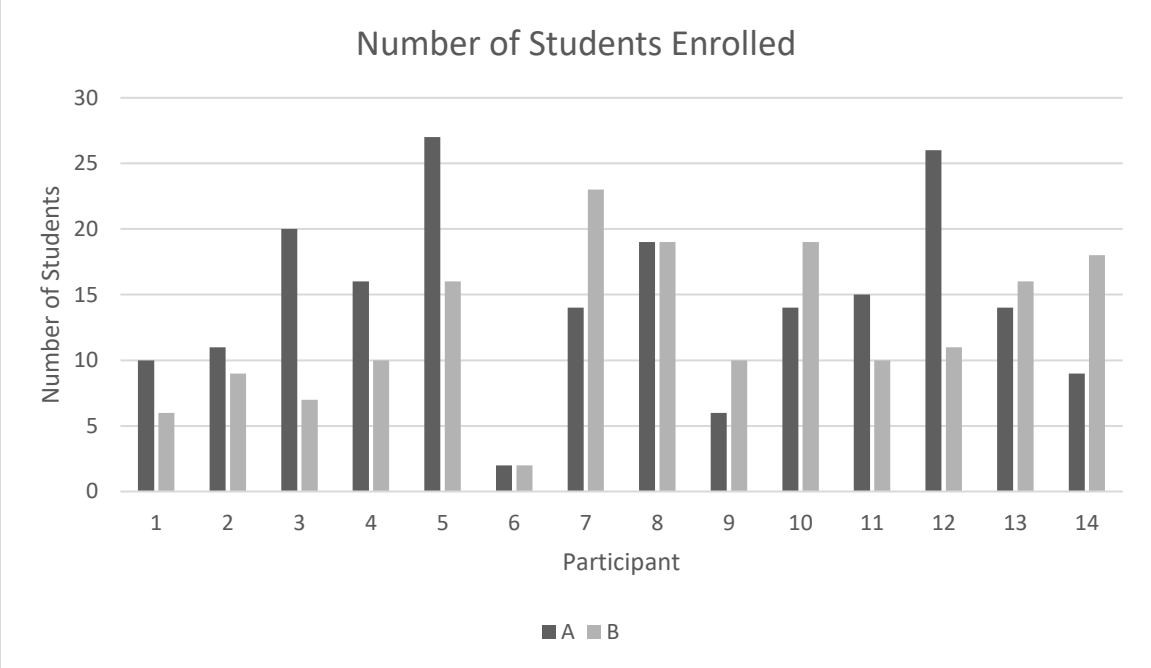

Figure 1. Student Enrollments in the Course Sample

Human Subjects

To ensure the data collected were kept private and confidential, all information was coded for anonymity purposes and saved under a password protected file on the researcher's computer. Additionally, all participants signed a consent form to allow the researcher to obtain data, as did the institution's provost.

Orientation

The researcher provided each participant with an orientation to the study and expository instruction either on the phone or in person. The researcher explained the purpose of the study, reviewed each section of the OSI, and sent electronic versions of pertinent study information. All participants received the OSI, a recommended syllabus template, a copy of the Quality Matters (2013) alignment, and a sample syllabus that received a perfect score.

Data Collection and Analysis

Mixed methods were used to achieve the purposes of this study. As defined by Johnson and Onwuegbuzie (2004), mixed method analysis was "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods and approaches, concepts or language into a single study" (p. 17). According to Creswell and Creswell (2018), "It is not enough to only analyze your qualitative and quantitative data. Further analysis consists of integrating the two databases for additional insight into research problems and questions" (p. xxii).

H01: There is no difference in student achievement between unique instructors' courses that were designed using the OSI and courses that were not.

To collect data for student achievement, the researcher exported grade records from the control and experimental courses via the LMS. The grade records were then put into an Excel file, coded for privacy, and analyzed. In all of the courses, a percentage score represented the final grade for each student. The researcher removed all points awarded for attendance, participation, and extra credit. As a result, the final percentage score reflected only content-based quizzes, discussions, and assignments. In other words, the mean achievement score for each student in the control and experimental courses was derived from all graded assignments, other than those for attendance, participation, and extra credit. A *t*-test for difference was then conducted comparing mean achievement scores for the course.

H02: There is no difference in student engagement between unique instructors' courses that were designed using the OSI and courses that were not.

Student engagement was measured by (a) student page views and (b) student participation in the course. Using course analytic data from the LMS, the mean number of student page views was compared between the control and experimental courses. Also using course analytic data from the LMS, course participation data were compared between the control and experimental courses. Student participation counts were comprised of student submissions, comments made on an announcement or discussion, joining a synchronous conference, or beginning a quiz.

H03: There is no difference in student satisfaction between unique instructors' courses that were designed using the OSI and courses that were not.

To measure student satisfaction, the researcher gathered end of course evaluations from the institution's student information system. The evaluation instrument consisted of

16 Likert-scale questions and one open-ended question. A mean score for the instructor and the course was provided in the evaluation summary. The researcher took the mean of all instructor scores from the control courses (1a, 2a, 3a, etc.) and the mean of all instructor scores from the experimental courses (1b, 2b, etc.) to compare using a *t*-test for difference in means. The researcher then took the mean of all course scores from the control courses and the mean of all course scores from all experimental courses to compare using a *t*-test for difference in means.

RQ1: How do the results of an objective, comprehensive, and evidence-based syllabus inventory relate to student engagement, achievement, and satisfaction in online courses?

To determine possible relationships between OSI components and student achievement, engagement, and satisfaction, the researcher disaggregated the OSI scores from the control and experimental courses. The scores were exported into an Excel spreadsheet and coded for anonymity. The OSI scores were further broken down into subcategories of achievement, page views, participation, and course and instructor evaluations. The percent of change from the control and experimental courses was then calculated.

RQ2: How does using an objective, comprehensive, and evidence-based syllabus inventory to design online courses relate to faculty instruction and satisfaction?

Upon completion of the experimental course, the researcher contacted all participants to obtain feedback. Each participant was asked or given the same six open-ended questions (see Chapter Four). For one participant, feedback was collected through a face-to-face interview. For another, feedback was collected via a phone conversation.

Of the 12 remaining participants, four responded to the questions via email. The remaining eight participants were sent another email with a link to a *Qualtrics* survey.

After obtaining feedback from all participants, the data were reviewed and stored in a password protected Excel file. The participants' names were coded for privacy. Upon analysis of the qualitative data, the common themes were axial coded.

Threat to Validity

Five of the control courses were administered shorty after adoption of a new learning management system at the research site. The corresponding learning curve may have influenced the number of student page views, which were analyzed in conjunction with $H_0 2$.

Participation in this study was purely voluntary and the researcher had no evaluative role over the participants.

Summary

To achieve the purposes of this study, a weighted and objective online syllabus inventory (OSI) was developed and served as the independent variable. Among control (pre-OSI) and experimental (post-OSI) online courses taught by the same instructors, relationships in the domain of student achievement were analyzed using quantitative achievement data from performance on the same assignments/assessments. In the domain of student engagement, relationships were analyzed using quantitative participation data from LMS analytics. In the domain of student satisfaction, relationships were analyzed using quantitative data from course and instructor evaluations. In the domain of faculty instruction and satisfaction, relationships were analyzed using qualitative data via feedback from open-ended questions.

Chapter Four: Analysis

The current study sought to analyze potential relationships between syllabus design and student achievement, student engagement, student satisfaction, faculty instruction, and faculty satisfaction. Following research conducted by Wieman and Gilbert (2014) and using a teaching practices inventory, a weighted and objective online syllabus inventory (OSI) was developed and served as the independent variable.

Chapter Four presented the results of the study. Quantitative data analysis involved *t*-tests for difference in means of data collected from a learning management system, Likert scale course evaluations, and final grades. Quantitative data from the researcher's evaluation of control and experimental course syllabi and qualitative data from participant feedback were also analyzed.

Null Hypothesis One

H01: There is no difference in student achievement between unique instructors' courses that were designed using the OSI and courses that were not.

To test this hypothesis, the researcher performed a series of *t*-tests for difference of two independent means. Table 4 displays the mean percentages and the results are presented in Table 5. Thirteen of the 14 courses did not see a significant difference in student achievement.

Table 4

Comparison of Student Achievement Data.

Participant	Mean Final Grade (Control)	Mean Final Grade (Experimental)
1	99.4%	99.67%
2	93.62%	85.19%
3	75.79%	81.14%
4	86.33%	82.81%
5	75.93%	84.18%
6	100%	100%
7	83.22%	86.92%
8	67.37%	87.45%
9	92.79%	94.05%
10	96.34%	97.67%
11	93.55%	88.63%
12	97.69%	96.57%
13	92.17%	98.21%
14	86.26%	73.57%

Table 5

Results of t-tests for $H_0$1

Participant	Result
1	Fail to reject
2	Fail to reject
3	Fail to reject
4	Fail to reject
5	Fail to reject
6	N/A
7	Fail to reject
8	Reject
9	Fail to reject
10	Fail to reject
11	Fail to reject
12	Fail to reject
13	Fail to reject
14	Fail to reject

Participant one. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after

implementation. There was not a significant difference between student achievement before the inventory (M= 99.4, SD= 1.9) and student achievement after the inventory (M=99.67, SD= .52); $t(5)= -.4193$, $p= .6924$) in the courses designed and delivered by participant one, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant two. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 93.62, SD= 6.35) and student achievement after the inventory (M=85.19, SD= 32.18); $t(8)= .7734$, $p= .4614$) in the courses designed and delivered by participant two, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant three. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 75.79, SD= 21.03) and student achievement after the inventory (M=81.14, SD= 26.44); $t(25)= -.543$, $p= .5919$) in the courses designed and delivered by participant three, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant four. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing

the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 86.33, SD= 11.25) and student achievement after the inventory (M= 82.81, SD= 16.3); $t(24)= .6536$, $p= .5196$) in the courses designed and delivered by participant four, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant five. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 75.93, SD= 26.65) and student achievement after the inventory (M= 84.18, SD= 26.5); $t(41)= -.9169$, $p= .365$) in the courses designed and delivered by participant five, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant six. There was no variation in the mean final score from the control (M = 100) and experimental (M = 100) courses taught by participant six.

Participant seven. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 83.22, SD= 21.14) and student achievement after the inventory (M= 86.92, SD= 12.24); $t(13)= -.5973$, $p= .561$) in the courses designed and delivered by

participant seven, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant eight. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was a significant difference between student achievement before the inventory (M= 67.37, SD= 29.1) and student achievement after the inventory (M= 87.45, SD= 10); $t(18)= -2.8474$, $p= .0107$) in the courses designed and delivered by participant eight, thus rejecting the null. This finding suggested student achievement was significantly different after implementation of the inventory.

Participant nine. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 92.79, SD= 4.01) and student achievement after the inventory (M= 94.05, SD= 8.19); $t(14)= -.3485$, $p= .7326$) in the courses designed and delivered by participant nine, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant ten. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 96.34, SD= 5.72) and student achievement after the inventory

(M= 97.67, SD= 1.68); *t*(13)= -.8466, *p*= .4125) in the courses designed and delivered by participant ten, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant eleven. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 93.55, SD= 6.8) and student achievement after the inventory (M= 88.63, SD= 14.87); *t*(9)= .9793, *p*= .353) in the courses designed and delivered by participant eleven, thus failing to reject the null. This finding suggested student achievement was not significantly higher different implementation of the inventory.

Participant twelve. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 97.69, SD= 4.06) and student achievement after the inventory (M= 96.57, SD= 5.65); *t*(35)= .684, *p*= .4985) in the courses designed and delivered by participant twelve, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant thirteen. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement

before the inventory (M= 92.17, SD= 13.8) and student achievement after the inventory (M= 98.21, SD= 4.62); $t(13)= -1.5615$, $p= .1424$) in the courses designed and delivered by participant thirteen, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Participant fourteen. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the course's mean final grade before the syllabus inventory was implemented and after implementation. There was not a significant difference between student achievement before the inventory (M= 86.26, SD= 8.68) and student achievement after the inventory (M= 73.57, SD= 27.34); $t(8)= 1.7957$, $p= .1103$) in the courses designed and delivered by participant fourteen, thus failing to reject the null. This finding suggested student achievement was not significantly different after implementation of the inventory.

Null Hypothesis Two

H02: There is no difference in student engagement between unique instructors' courses that were designed using the OSI and courses that were not.

***Page views*.** To test this hypothesis, in part, the researcher conducted a series of *t*-tests for difference of two independent means for every course's student page views. The results are illustrated in Table 6. Five of the 14 courses rejected the null, suggesting there was significant evidence to support a difference in student engagement after implementation of the OSI.

Table 6

Results of t-tests for $H_0$2 (page views)

Participant	Result
1	Fail to reject
2	Fail to reject
3	Fail to reject
4	Fail to reject
5	Reject
6	Fail to reject
7	Reject
8	Reject
9	Fail to reject
10	Fail to reject
11	Fail to reject
12	Reject
13	Reject
14	Fail to reject

Participant one. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 403.3, SD= 366.58) and student engagement after the inventory (M=295.67, SD= 186.01); $t(14)= .6633$, $p= .5179$) in the courses designed and delivered by participant one, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant two. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 339.27, SD= 121.89) and student

engagement after the inventory (M=530.11, SD= 436.95); $t(7)= -1.27$, $p= .2396$) in the courses designed and delivered by participant two, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant three. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 554.55, SD= 209.84) and student engagement after the inventory (M=425.43, SD= 108.49); $t(25)= 1.543$, $p= .1353$) in the courses designed and delivered by participant three, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant four. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 471, SD= 194.98) and student engagement after the inventory (M=593.2, SD= 167.43); $t(24)= -1.637$, $p= .1146$) in the courses designed and delivered by participant four, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant five. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 241.22, SD= 150.65) and student engagement after the inventory (M= 61.94, SD= 315.16); $t(15)= -4.4394$, $p= .0004$) in the courses designed and delivered by participant four, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant six. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 534, SD= 22.63) and student engagement after the inventory (M=447, SD= 173.56); $t(2)= .6958$, $p= .5585$) in the courses designed and delivered by participant six, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant seven. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 667.21, SD= 228.69) and student engagement after the inventory (M=884.09, SD= 317.58); $t(35)= -2.2231$, $p= .0328$) in

the courses designed and delivered by participant seven, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant eight. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 333.79, SD= 173.24) and student engagement after the inventory (M=584.74, SD= 234.9); $t(35)= -3.8223$, $p= .0005$) in the courses designed and delivered by participant eight, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant nine. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 413.17, SD= 167.57) and student engagement after the inventory (M= 783, SD= 605.29); $t(5)= -1.8194$, $p= .1285$) in the courses designed and delivered by participant nine, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant ten. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean

number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 588.36, SD= 285.76) and student engagement after the inventory (M= 712.58, SD= 488.8); $t(31)= -.848$, $p= .4029$) in the courses designed and delivered by participant ten, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant eleven. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 998.87, SD= 496.57) and student engagement after the inventory (M= 702.2, SD= 198.24); $t(9)= 2.0786$, $p= .0674$) in the courses designed and delivered by participant eleven, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant twelve. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 449.65, SD= 253.53) and student engagement after the inventory (M= 750.82, SD= 373.59); $t(35)= -2.3841$ $p= .0227$) in the courses designed and delivered by participant twelve, thus rejecting the null. This

finding suggested student engagement was significantly different after implementation of the inventory.

Participant thirteen. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 388.57, SD= 184.04) and student engagement after the inventory (M= 737.5, SD= 278.66); $t(28)= -3.9823$ $p= .0004$) in the courses designed and delivered by participant thirteen, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant fourteen. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student page views before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 574.44, SD= 230.46) and student engagement after the inventory (M= 545.44, SD= 326.97); $t(25)= .2372$, $p= .8144$) in the courses designed and delivered by participant fourteen, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participation. To further test this hypothesis, the researcher analyzed the number of times each student participated in the course via LMS analytics. As illustrated in Table 7, the null was rejected in six out of 14 courses.

Table 7

Results of t-tests for $H_0$2 (participation)

Instructor	Result
1	Reject
2	Reject
3	Reject
4	Fail to reject
5	Reject
6	Fail to reject
7	Fail to reject
8	Fail to reject
9	Fail to reject
10	Fail to reject
11	Reject
12	Fail to reject
13	Fail to reject
14	Reject

Participant one. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 12.9, SD= 4.7) and student engagement after the inventory (M= 7.83, SD= 1.6); $t(5)= 3.12$, $p= .0263$) in the courses designed and delivered by participant one, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant two. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 33.82, SD= 2.75) and student engagement

after the inventory (M= 40.63, SD= 1.19); $t(7)= -7.32$, $p= .0002$) in the courses designed and delivered by participant two, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant three. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 49.45, SD= 14.76) and student engagement after the inventory (M= 27.43, SD= 7.21); $t(25)= 3.76$, $p= .0009$) in the courses designed and delivered by participant three, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant four. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 24.44, SD= 4.29) and student engagement after the inventory (M= 23.9, SD= 5.45); $t(24)= .2804$, $p= .7816$) in the courses designed and delivered by participant four, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant five. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was a significant difference between

student engagement before the inventory (M= 18.56, SD= 8.8) and student engagement after the inventory (M= 24.31, SD= 8.21); $t(41)= 2.12$, $p= .0397$) in the courses designed and delivered by participant five, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant six. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 12.5, SD= .71) and student engagement after the inventory (M= 13, SD= 2.83); $t(2)= .2425$, $p= .831$) in the courses designed and delivered by participant six, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant seven. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 32.93, SD= 9.15) and student engagement after the inventory (M= 30.26, SD= 7.66); $t(35)= .9541$, $p= .3466$) in the courses designed and delivered by participant seven, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant eight. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing

the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 14.05, SD= 7.59) and student engagement after the inventory (M= 13.68, SD= 3.27); $t(18)= .1943$, $p= .8481$) in the courses designed and delivered by participant eight, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant nine. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 28.33, SD= 4.32) and student engagement after the inventory (M= 28.8, SD= 3.97); $t(14)= .2206$, $p= .8286$) in the courses designed and delivered by participant nine, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant ten. A preliminary test of variances showed the variances were unequal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 23, SD= 9.66) and student engagement after the inventory (M= 18.21, SD= 4.52); $t(13)= 1.7211$, $p= .1089$) in the courses designed and delivered by participant ten, thus failing to reject the null. This finding

suggested student engagement was not significantly different after implementation of the inventory.

Participant eleven. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 42.6, SD= 9.56) and student engagement after the inventory (M= 34.4, SD= 6.96); $t(23)= 2.3254$, $p= .0292$) in the courses designed and delivered by participant eleven, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Participant twelve. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 40.69, SD= 7.41) and student engagement after the inventory (M= 37.64, SD= 7.67); $t(35)= 1.1353$, $p= .2639$) in the courses designed and delivered by participant twelve, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant thirteen. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was

implemented and after implementation. There was not a significant difference between student engagement before the inventory (M= 28.36, SD= 5.49) and student engagement after the inventory (M= 24.44, SD= 5.34); $t(28)= 1.9802$, $p= .0576$) in the courses designed and delivered by participant thirteen, thus failing to reject the null. This finding suggested student engagement was not significantly different after implementation of the inventory.

Participant fourteen. A preliminary test of variances showed the variances were equal. An independent-sample *t*-test for difference in means was conducted comparing the mean number of LMS student participation count before the syllabus inventory was implemented and after implementation. There was a significant difference between student engagement before the inventory (M= 24.89, SD= 7.57) and student engagement after the inventory (M= 11.17, SD= 5.61); $t(25)= 5.322$, $p< .0001$) in the courses designed and delivered by participant fourteen, thus rejecting the null. This finding suggested student engagement was significantly different after implementation of the inventory.

Null Hypothesis Three

H03: There is no difference in student satisfaction between unique instructors' courses that were designed using the OSI and courses that were not.

To test this hypothesis, the researcher conducted two *t*-tests for difference of dependent means from the control and experimental course evaluations. The results are illustrated in Table 8. The mean scores related to course level factors ($p = .0348$)were significantly higher after implementation, while scores related to instructor level factors ($p = .0565$) were not significantly different after OSI implementation.

Table 8

Results of t-tests for $H_0$3

Instructor	Result
Course Level Factors	Reject
Instructor Level Factors	Fail to reject

Course level factor. A dependent-sample *t*-test for difference of means was conducted comparing the end-of-course evaluations before the syllabus inventory was implemented and after implementation. There was a significant difference between student satisfaction before the inventory (M= 3.28, SD= .28) and student satisfaction after the inventory (M= 3.55, SD= .27); $t(12)= -2.3767$, $p= .0348$) in course level factors, thus rejecting the null. This finding suggested the satisfaction was significantly higher after implementation of the inventory.

Instructor level factor. A dependent-sample *t*-test for difference of means was conducted comparing the end-of-course evaluations before the syllabus inventory was implemented and after implementation. There was not a significant difference between student satisfaction before the inventory (M= 3.27, SD= .31) and student satisfaction after the inventory (M=3.53, SD= .23); $t(12)= -2.1105$, $p=.0565$) in course level factors, thus failing to reject the null. This suggested the satisfaction was not significantly different after implementation of the inventory.

Table 9 displays the response rates for student satisfactions surveys, along with the mean course ratings and mean instructor ratings.

Table 9

Comparison of Student Satisfaction Data.

Course	Evaluation Response Rate	Course Mean	Instructor Mean
1a	80%	3.6	3.34
1b	67%	4	3.75
2a	73%	3.43	3.45
2b	44%	3.27	3.25
3a	40%	3.26	3.29
3b	29%	3.8	3.72
4a	75%	3.68	3.67
4b	60%	3.21	3.17
5a	56%	3.51	3.47
5b	50%	3.37	3.28
6a	0%	n/a	n/a
6b	100%	3.71	4
7a	57%	3.28	3.27
7b	52%	3.74	3.67
8a	53%	3.5	3.56
8b	68%	3.55	3.59
9a	33%	3	3
9b	70%	4	4
10a	50%	3.29	3.4
10b	95%	3.41	3.62
11a	60%	2.86	3.18
11b	70%	3.54	3.48
12a	62%	3.26	3.39
12b	45%	3.27	3.52
13a	50%	2.74	3.16
13b	63%	3.35	3.6
14a	56%	3.19	3.04
14b	72%	3.59	3.45

Research Question One

RQ1: How do the results of an objective, comprehensive, and evidence-based syllabus inventory relate to student engagement, achievement, and satisfaction in online courses?

Table 10

Percent of Change from Control to Experimental Courses by OSI Section

Participant	OSI Section										
	1	2	3	4	5	6	7	8	9	10	11
1	.03	.1	.05	.02	.12	.1	.01	0	0	0	0
2	.02	.09	0	0	.03	.08	.01	.15	.01	0	0
3	0	0	0	0	.01	.01	.1	0	.01	0	0
4	0	.07	0	0	.05	.01	.1	.2	.02	0	0
5	.01	.07	0	0	-.03	.01	.01	.08	.07	0	0
6	0	.07	0	0	0	.01	.01	0	0	0	0
7	.01	0	0	0	.02	0	.01	0	.03	0	0
8	.01	.07	0	0	.05	.03	.1	0	.02	0	0
9	.02	.01	0	0	.05	.05	0	.08	0	0	0
10	.01	.02	0	.01	.05	.06	0	.03	0	0	0
11	0	0	0	0	-.01	.08	0	.08	0	0	0
12	0	0	0	0	.06	0	0	.03	.01	0	0
13	0	0	0	0	.04	0	0	.33	.01	0	0
14	0	.07	0	0	.06	.05	.1	.28	.03	0	0

Table 11

Percent of Dependent Variable Change from Control to Experimental Courses

Participant	achievement	engagement-page views	engagement-participation	satisfaction-course	satisfaction-instructor
1	.27%	-36.4%	-64.75%	10%	10.93%
2	-9.9%	36%	16.76%	-4.89%	-6.15%
3	6.59%	-30.35%	-80.28%	14.21%	11.56%
4	-4.25%	20.6%	-2.26%	-14.64%	-15.77%
5	9.8%	60.71%	23.65%	-4.15%	-5.79%
6	0%	-19.46%	3.85%	N/A	N/A
7	4.26%	24.53%	-8.82%	12.3%	10.9%
8	22.96%	43.4%	-2.7%	1.41%	.84%
9	1.34%	47.23%	1.63%	25%	25%
10	1.36%	17.43%	-26.3%	3.52%	6.08%
11	-5.54%	-42.25%	-23.84%	19.21%	8.62%
12	-1.16%	33.45%	-8.1%	.31%	3.69%
13	6.15%	47.31%	-16.4%	18.21%	12.22%
14	-17.25%	-5.32%	-122.83%	11.14%	11.88%

Research Question Two

RQ2: How does using an objective, comprehensive, and evidence-based syllabus inventory to design online courses relate to faculty instruction and satisfaction?

Did you notice any changes in your course syllabus after implementing the Online Syllabus Inventory?

Of the 14 participants, nine reported no noticeable changes in the course syllabus after implementation of the OSI. Three participants did not have noticeable changes, because they had already been incorporating many of the OSI items. One stated, 'Items were already encouraged so it didn't change much.' Still another participant 'felt better knowing I was using something recommended by the university.' The remaining participants noted substantial changes in organization of the course, as well as a decrease in student confusion at the beginning of the term.

Did the Online Syllabus Inventory change your teaching philosophy in any way?

Six participants stated no change in teaching philosophy; one elaborated further stating although there was no change, the OSI did make course expectations clearer for students. Another participant noticed the OSI allowed for increased transparency for students. One participant stated, 'I was able to organize components more clearly; I also had a checklist to assure that I had all components included in my course.' Another noticed a change in self-reflection, 'I would not say that it changed my teaching philosophy, but it definitely made me reflect on if I was adequately meeting these components.' One participant stated, 'I'm not sure I can say it changed my actual philosophy on what I want students to know and be able to do by the end of the course,

however, it did change the organization of the material which I do think impacted student success.'

Do you believe your students' achievement, engagement, or satisfaction was affected?

The majority of participants did not believe the students' achievement, engagement, or satisfaction was affected by the implementation of the OSI. However, one participant noted the student evaluations showed higher remarks for organization and expectations. One instructor mentioned the OSI made the syllabus clearer and more concise. Another participant stated,

> Yes, definitely! I noticed fewer students submitting late work or missing assignments, and even the quality seemed to be better than in a previous semester. I think the quiz after the first introduction module that they have to complete to move on, ensured they actually looked at the rubrics for grading the assignments which led to more students meeting the requirements from the get-go.

What components of the Online Syllabus Inventory were the most challenging to implement?

Participants found student accessibility and student authentication challenging to implement, but most of all, learning intentions/outcomes. One participant elaborated, 'The most difficult to put in writing was the comparison of the course objectives to university outcomes and accreditation guidelines. However, in the end this was also the most helpful.'

Do you feel the Online Syllabus Inventory affected your instructional practices or satisfaction level in any way?

Three participants noted increased satisfaction levels after implementation of the OSI. One stated, 'I feel much better sense of direction. Much less stressful. Very thankful that I did it. I think everyone could benefit from it.' Similarly, one participant noticed examining lessons more carefully. Another participant commented, 'Happy to have a review of my syllabus, just to make sure that I am in fact listing everything correctly. Providing templates to online instructors can only help with our consistency in online instruction!' One participant noted the potential to be more present in the online setting,

> Yes, opening the entire course and having the introduction modules was very helpful. While it's more work on the front end, I could then spend more time reading student feedback/discussions and keep a better eye on who may be falling behind.

Please provide any additional feedback you may have observed.

Two participants stated the OSI made no changes in their teaching. One instructor believed the OSI was helpful and planned on sharing with other faculty. Another instructor found the OSI helpful and implemented it in all of the courses they taught, both online and on-ground. An additional participant commented again on the time commitment involved, 'It took a while to set up the first time but after that I just revised it. I believe it makes course materials more explicit.'

Summary

The purpose of this mixed methods study was to analyze possible relationships between syllabus design and student engagement, faculty engagement, student

satisfaction, faculty satisfaction, and student achievement. To achieve this purpose, a weighted and objective online syllabus inventory (OSI) was developed and served as the independent variable. Between control and experimental courses, student achievement was found to be significantly difference for one of the 14 participants, student engagement was found to be significantly higher for five of the 14 participants. Student satisfaction was found to be significantly higher for the sample, with regard to course level factors; yet, no differences were established, with regard to instructor level factors.

Chapter Five: Summary and Discussion

The purpose of this research study was to explore the possible relationships between syllabus design and student engagement, faculty engagement, student satisfaction, faculty satisfaction, and student achievement. This study consisted of nine undergraduate courses, six of those being general education courses, and five graduate level courses. Of the 28 control and experimental courses examined, 379 students were represented in the data. Using data from the LMS, student information system, instructor feedback, and OSI results allowed for analysis of engagement, satisfaction, and achievement. Data were analyzed using a *t*-test for difference of two independent means and a *t*-test for difference of dependent means. The data revealed significant change after OSI implementation in two of the courses for student achievement, five courses for engagement (page views), six courses for engagement (participation), and overall course level satisfaction.

According to Creswell and Creswell (2018), "It is not enough to only analyze your qualitative and quantitative data. Further analysis consists of integrating the two databases for additional insight into research problems and questions" (p. xxii). Chapter Five summarizes the findings from this study, presents a discussion of the collective results, and provides recommendations for future research.

Summary of Findings

H01: There is no difference in student achievement between unique instructors' courses that were designed using the OSI and courses that were not.

To test this hypothesis, the researcher performed a *t*-test for difference of two independent means. Twelve of the 14 courses did not see a significant difference in student achievement.

H02: There is no difference in student engagement between unique instructors' courses that were designed using the OSI and courses that were not.

To test this hypothesis, the researcher completed a *t*-test for difference of two independent means for every course's student page views and participation. Five out of the 14 courses rejected the null when looking at student page views, suggesting there was significant evidence to support a difference in student engagement after implementation of the OSI. Six out of the 14 courses rejected the null when looking at student participation; this finding suggested there was significant evidence to support a difference in student engagement after implementation of the OSI.

H03: There is no difference in student achievement between unique instructors' courses that were designed using the OSI and courses that were not.

To test this hypothesis, the researcher completed a *t*-test for difference of dependent means. When analyzing the course-level factors of the course evaluations, the researcher rejected the null; this finding suggested there was significant evidence to support a difference in student satisfaction after implementation of the OSI. When analyzing the instructor-level factors of the course evaluations, the researcher failed to reject the null, this finding suggested there was not significant evidence to support a difference in student satisfaction after implementation of the OSI. Although the null was rejected when analyzing instructor-level factors, the *p* value (p=.0565) was marginally higher than the level of significance (p=.05).

RQ1*:* How do the results of an objective, comprehensive, and evidence-based syllabus inventory relate to student engagement, achievement, and satisfaction in online courses?

Upon analysis of OSI results in relation to student achievement, engagement, and satisfaction, the OSI scores were further broken down into subcategories of achievement, page views, participation, and course and instructor evaluations. The percent of change from the control and experimental courses was then calculated. For Section 6, of the 11 participants that increased their score, 7 saw an increase between 1.41% and 25% in course level satisfaction (one was n/a). For Section 7, of the 9 participants that increased their score, 6 saw an increase between 20.6% and 60.71% in engagement (page views). For Section 8, of the 9 participants that increased their score, 8 saw an increase between 17.43% and 60.71% in engagement (page views). For Section 9, of the 9 participants that increased their score, 6 saw an increase between 24.53% and 60.71% in engagement (page views). For Section 9, of the 9 participants that increased their score, 6 saw an increase between .84% and 12.22% in satisfaction (instructor level).

RQ2*:* How does using an objective, comprehensive, and evidence-based syllabus inventory to design online courses relate to faculty instruction and satisfaction?

A secondary element to the study included a qualitative interview with the intent to determine whether the Online Syllabus Inventory related to faculty instruction and satisfaction. The researcher searched for common themes and found four of the participants reported no change in their instruction or satisfaction. Three of the instructors reported implementation of the OSI forced them to be more organized and intentional in their course delivery and organization. Additionally, two of participants noted

implementing components of the inventory were easy to do. Five of the participants found the OSI to be helpful.

Consistent with Wieman and Gilbert's (2014) Teaching Practices Inventory findings, this study displayed a wide diversity in OSI scores over different departments and disciplines. This study also paralleled with Wieman and Gilbert's (2014) study, in that student achievement outcomes increased.

Discussion

Based on the collective results of this study, relationships between syllabus design and student achievement, engagement, and satisfaction were inconclusive. The greatest effect observed in this study was a significant increase in student satisfaction, as measured by student course evaluations. Due to the subjective nature of course evaluations, the ultimate significance of this finding was subject to debate. For example, Marsh (2007) found student course evaluations to be the most reliable, because they represent many evaluators over more than one section. However, Vasey and Carroll (2014) found the highest evaluation response numbers came from students who were either very pleased or extremely displeased with their grades; thus, creating a polarized representation of the course evaluation data, which could potentially lead to an overall inaccurate representation of the instructor's teaching effectiveness. Course evaluations should not be looked at exclusively; a more accurate evaluation of the instructor required additional data via teaching portfolios or peer reviews (Hammer et al., 2010).

The inconclusiveness of the finding from this study are also supported by comparing the overall results of the OSI between control and experimental courses. Following the orientation to the study with each participant, the researcher completed the

OSI for the control (completed) courses. The researcher also completed the OSI for the experimental courses for comparative purposes (Table 12). Improvement in scores was seen across all courses, but the extent of the improvement varied widely. Only one course scored a perfect score of 100%.

Table 12

OSI Scores for Control and Experimental Courses

Course	OSI Score	Course	OSI Score	% Increase
1a	50.5%	1b	80%	29.5%
2a	55.5%	2b	94%	38.5%
3a	73%	3b	85%	12%
4a	55.5%	4b	100%	44.5%
5a	66.5%	5b	78%	11.5%
6a	50%	6b	58%	8%
7a	65%	7b	79%	14%
8a	61%	8b	87.5%	26.5%
9a	59%	9b	80%	21%
10a	30.5%	10b	47.5%	17%
11a	37%	11b	44%	7%
12a	58%	12b	68%	10%
13a	35.5%	13b	73%	37.5%
14a	29.5%	14b	87.5%	58%

Despite the increase in OSI scores, significant change was only found in two courses for student achievement, five courses for engagement (page views), six courses for engagement (participation), and overall course level satisfaction. Despite no significant change in instructor-level factors from student course evaluations, the calculated *p* value of .0565 proved to be very close to rejecting the null.

Online Syllabus Inventory

Following the work of Wieman and Gilbert (2014), the research instrument — OSI — that was developed for this study extended beyond the parameters of this study and presented several practical advantages to higher education faculty and institutions.

Such advantages are underscored by their alignment to established standards. Specifically, the Interregional Guidelines for the Evaluation of Distance Education (2011) prescribed by the Council of Regional Accrediting Commissions (C-RAC).

1. Online learning is appropriate to the institution's mission and purposes (Council of Regional Accrediting Commissions [C-RAC], 2011).

The OSI resulted in an *objective* review of components that supported academic integrity, student success and institutional vision, values, outcomes, and goals for the student experience. The OSI could be adapted to include information that was required and/or desired by an institution.

2. The institution's plans for developing, sustaining, and, if appropriate, expanding online learning offerings are integrated into its regular planning and evaluation processes (C-RAC, 2011).

Data collected from OSIs were a means of conducting needs analysis. Individual, cohort, program, department, and institutional data could be analyzed to identify strengths, weaknesses, and professional development opportunities. OSI data could also be integrated into an institution's system of evaluation and promotion. As recommended by Berk (2005),

> A unified conceptualization of teaching effectiveness [uses] multiple sources of evidence, such as student ratings, peer ratings, and self-evaluation, to provide an accurate and reliable base for formative and summative decisions. Multiple sources build on the strengths of all sources, while compensating for the weaknesses in any single source. This triangulation of sources is recommended in

> view of the complexity of measuring the act of teaching and the variety of direct and indirect sources and tools used to produce the evidence. (p. 48)

3. Online learning is incorporated into the institution's systems of governance and academic oversight (C-RAC, 2011).

As a self-evaluation instrument, the inventory placed responsibility on faculty and instructors (the stakeholders with the most potential to make changes/improvements and the greatest influence on student learning) to design and deliver courses that supported academic integrity and student success. This approach aligned with an overarching finding from Hattie's (2009) seminal *Visible Learning* research: the greatest effects on learning occurred when teachers became students of their own teaching and students became their own teachers. According to Seldin (1995),

> Regardless of how good or how poor we are as teachers, we all have the potential to get better over time. Yet some teachers continually improve and approach their potential while others experience a modest improvement early in their career and then seem to level off in quality or sometimes even decline . . . I would argue the primary difference between those who do and those who do not improve, is that only the former gather information about their teaching and make an effort to improve some aspect of it — every time they teach (p. 47).

4. Curricula for the institution's online learning offerings are coherent, cohesive, and comparable in academic rigor to programs offered in traditional instructional formats (C-RAC, 2011).

As a syllabus was a common denominator among courses, the OSI was applicable to all faculty/instructors and types of courses. According to the Organisation for Economic Cooperation and Development (2010), "An institutional commitment to quality teaching . . . calls for leaders and staff to identify benchmarks, promote good practices and scale them up across departments" (p. 6). The inventory did not promote a one-size-fits-all approach to course design and delivery. Rather, the OSI placed responsibility on users — faculty — to clarify outcomes and corresponding learning experiences, resources, and opportunities that support academic integrity and student success. With the exception of general information (such as course number, name, description, etc.) and program-specific information (such as texts, minimum course objectives, etc.), components are open-ended — faculty and instructors are free to determine the corresponding content (such as method for determining final grades, course schedule, etc.) and formatting at their discretion.

5. The institution evaluates the effectiveness of its online learning offerings, including the extent to which the online learning goals are achieved, and uses the results of its evaluations to enhance the attainment of the goals (C-RAC, 2011).

The purpose of the inventory was to support faculty in designing a syllabus that simultaneously functioned as a compass and a map. A syllabus with a perfect OSI score included details associated with course, program, and institutional outcomes (compass), as well as corresponding measures of assessment and learning activities (map). At varying degrees of scale, student performance data from these assessments could then be analyzed for the purpose of continuous improvement of student learning outcomes and experiences.

According to Arreola (2000), “Higher education has yet to establish a universally accepted definition of the characteristics and skills necessary for teaching excellence” (p. 98). At the same time, “many people claim to know ‘good’ teaching when they see it; they simply don't know how to document it in a valid and reliable way” (Howard University Center for Excellence in Teaching, Learning, and Assessment, 2007, para. 1). As a valid and reliable means of documenting instructional practice, inventory scores could also be used for comparative purposes between terms, academic years, faculty/ instructors, courses, programs, departments, schools, campuses, etc.

6. Faculty responsible for delivering the online learning curricula and evaluating the students’ success in achieving the online learning goals are appropriately qualified and effectively supported (C-RAC, 2011).

In addition to being evaluative, the inventory was also instructive. Faculty new to online teaching were introduced to evidence-based practices for effective online course design and delivery, institutional requirements, and federal requirements. For faculty who were experienced online instructors, the inventory reinforced the importance of evidence-based practices, such as providing frequent feedback and being consistently present and responsive within a course.

The comprehensiveness of the inventory was another means of providing support to faculty. According to Stanny, Gonzalez, and McGowan (2015), “An analysis of syllabus content that examines only one component of the syllabus (e.g., the list of student learning outcomes) is an imperfect window on how an instructor teaches” (p. 910). Comprehensive analysis of course design, however, is an inclusive measure of components that work together to support effective instruction.

Additionally, patterns or trends in results from the inventory could be used to provide faculty with timely and relevant training and support opportunities. A living repository of syllabi that earned perfect scores could also be developed and shared with an institution's online faculty.

7. The institution provides effective student and academic services to support students enrolled in online learning offerings (C-RAC, 2011).

A syllabus that earned a perfect score from the inventory included details about student support resources and services provided by an institution. Efforts to determine and include this information may also be valuable to faculty, particularly with those new to an institution. A syllabus that earned a perfect score from the inventory also included details associated with student-student and faculty-student interaction. Supported by findings from multiple studies, rich student-student and faculty-student interaction improved performance on multiple metrics, including attendance, engagement, and learning (Koller, 2012).

8. The institution provides sufficient resources to support and, if appropriate, expand its online learning offerings (C-RAC, 2011).

In addition to assisting faculty to develop syllabi that led to established outcomes, another purpose of the inventory was to support faculty in developing a blueprint for developing or building courses in learning management systems. After designing a comprehensive course schedule, the foundation for developing digital components, including but was not limited to course modules, assessments, and discussions, etc., was also established.

9. The institution assures the integrity of its online offerings (C-RAC, 2011).

A syllabus that earned a perfect score from the inventory included detailed information about requirements that were applicable to all online courses. From academic honesty policies to methods of assuring the student who submitted coursework was actually the student who completed the coursework to detailing expectations for any required face-to-face, on-ground work (e.g., internships, specialized laboratory work), the inventory supported a range of measures to assure academic integrity and enhanced the learning experience.

Recommendations for Future Research

The current study analyzed relationships between control and experimental courses delivered in a higher education setting, within one year. Future research on the relationships between syllabus design and corresponding effects should be longitudinal According to Caruana, Roman, Hernández-Sánchez, and Solli (2015), "longitudinal methods may provide a more comprehensive approach to research, that allows an understanding of the degree and direction of change over time" (p. 539). Analysis from years or even decades could provide a richer and more reliable perspective of attendant influences of syllabus design on the complex interplay between components of course design to achieve established outcomes.

To increase the validity of the study, the researcher also recommends increasing the sample size, making it more reflective of the institution's overall population. All schools and course levels would be equally represented. To further ensure reliability of the data, the researcher would only include courses taught over equal term lengths. The researcher would also incorporate a self-evaluation of the OSI by each participant, in addition to the coaching each participant received.

Another recommendation for future research is making changes to the inventory developed for this study. Although the inventory offered several potential advantages, there were also several opportunities for improvement.

Section 3: Learning Intentions. To support the natural human propensity to learn and explore (Medina, 2008), the counterpart to learning — teaching — becomes a matter of establishing the conditions in which students could learn without restrictions. Supported throughout the literature, priority was where such conditions begin. In 1962, Taba claimed lack of focus to be one of the greatest drawbacks to the usual organization of learning. Decades later, the National Research Council (1999) found the same "superficial coverage of all topics in a subject area must be replaced with in-depth [study] of fewer topics that allows key concepts in that discipline to be understood" (p. 20). According to the Eberly Center for Teaching Excellence and Educational Innovation (as cited in Carnegie Mellon University, 2015),

> Effective teaching involves prioritizing the knowledge and skills we choose to focus on. Coverage is the enemy: Don't try to do too much in a single course. Too many topics work against student learning, so it is necessary for us to make decisions—sometimes difficult ones—about what we will and will not include in a course. This involves (a) recognizing the parameters of the course (e.g., class size, students' backgrounds and experiences, course position in the curriculum sequence, number of course units), (b) setting our priorities for student learning, and (c) determining a set of objectives that can be reasonably accomplished. (para. 4)

To collect data for a study of K-12 Mathematics and Science Education in the United

States (Weiss, Pasley, Smith, Banilower, & Heck, 2003), a research team spent 18 months observing more than 350 representative lessons and conducting follow-up interviews with teachers to explore their decision making. High-quality lessons were found to be “structured and implemented in a manner that engaged students with important mathematics or science concepts.” (Weiss & Pasley, 2004, p. 25). According to Gardner (1993),

> The greatest enemy of understanding is coverage. I can't repeat that often enough. If you're determined to cover a lot of things, you are guaranteeing that most students will not understand, because they haven't had time enough to go into things in depth, to figure out what the requisite understanding is, and be able to [demonstrate] that understanding in different situations. (p. 24)

The aim of this recommendation — prioritizing learning intentions — was not to suggest *the* priorities to teach and learn, but rather *that* priorities be identified. Although the notion of priorities may seem contradictory to unrestricted learning, limitations of the human mind point otherwise. According to Hattie and Yates (2014), “Our mind has severe and inherent limitations, as built-in characteristics. When these limitations are reached, through experiences or depletion, deep and meaningful processing becomes impossible, and only shallow learning will occur from that point” (p. xiii). It’s also important to note that prioritizing learning was nothing new. As Comenius (1907) proclaimed centuries ago in *The Great Didactic of John Amos Comenius*, "Let the main object of this, our Didactic, be as follows: to seek and to find a method of instruction by which teachers may teach less, but learners learn more” (p. 4).

Section 8: Course Schedule. The extent, or depth and breadth, of student learning was influenced by complex interplay between cognitive (i.e., factual, conceptual, procedural, and metacognitive knowledge), affective (i.e., values, attitudes, and interests), and physiological factors. Add the variables of prior knowledge and experience and the extent, or depth and breadth, of learning would inevitably vary, even between students who completed the same learning experience with the same teacher and demonstrated the same degree of effort and produce the same quality of work. Two interrelated conditions, however, applied to all learners, regardless of human diversity. First, learning could be conceived as "the process of developing sufficient surface knowledge to then move to deeper understanding such that one can appropriately transfer this learning to new tasks, and situations" (Hattie, 2015, p. 15).

Second, the rubber meets the road — learning was revealed — through performances of understanding (Perkins & Blythe, 1994); ongoing assessment was critical to making learning visible. To this end, the effects of incorporating both formative and summative assessments/assignments into coursework were well documented (Theall & Franklin, 2010). Accordingly, inventory could be expanded to include objective assessment of the extent to which formative and summative assessment opportunities were incorporated — a potential improvement with implications for validity and reliability. As McTighe (2015) advocated:

> Multiple measures provide a richer picture. Assessment is a process by which we make inferences about what students know, understand, and can do based on information obtained through assessments. Educators sometimes loosely refer to an assessment as being valid and reliable. However, a more precise conception

> has to do with the extent to which the results of an assessment permit valid and reliable inferences. Since all forms of assessment are susceptible to measurement error, our inferences are more dependable when we consider multiple measures; i.e., various sources of evidence. Consider this principle in terms of a photographic analogy. A photo album typically contains a number of pictures taken over time in different contexts. When viewed as a whole, the album presents a more accurate and revealing "portrait" of an individual than does any single snapshot. (p. 2)

According to Stanny et al. (2015),

> We can be most confident that the course structure described on a syllabus reflects actual learning activities when instructors describe a written assignment or required project/activity, describe how the assignment contributes to a final grade, and articulate an [outcome] that aligns with the required activity. When these conditions are met, it is highly likely that syllabus content accurately describes the learning outcomes and instructional strategies the instructor uses in the course. (p. 19)

This recommendation — course schedules should include multiple opportunities for students to monitor their progress—also aligns with student voices. The top two challenges identified by a national sample of online learners were "the quality of instruction is excellent" and "assignments are clearly defined in the syllabus" (Ruffalo Noel Levitz, 2017, p. 9).

Another potential improvement to Section 9 of the inventory was incorporating objective assessment of specific evidence-based instructional influences. To date, perhaps

the most powerful collection of empirically grounded influences on learning could be found in Hattie's (2009; 2008; 2012; 2015; 2017) Visible Learning research, which has even been dubbed as teaching's holy grail (Mansell, 2008). Hattie used effect sizes (*d*) to quantify and rank factors related to students, homes, schools, teachers, and approaches to teaching. After analysis of the findings from more than 800 meta-analyses (50,000+ studies; 240+ million students), Hattie (2013) found the average effect size — the hinge point — to be $d = 0.40$ and argued this effect should be the baseline for considering the value of any potential instructional innovation. According to Dean, Hubbell, Pitler, and Stone (2012),

> An effect size expresses the increase or decrease, in standard deviation units, in the outcome (e.g., achievement) for an experimental group (e.g., the group of students who are exposed to a specific instructional technique) versus a control group [e.g., the group of students who are not exposed to a specific instructional technique]. Using a statistical conversion table, we can translate effect sizes into percentile point gains. For example, an effect size of 1.00 translates to a 34-point percentile difference that favors students instructed under the experimental conditions. (p. xiii)

Hattie's original work was released in 2009. Since then, Hattie continued to synthesize the findings from hundreds of additional meta-analyses. Several influences well above the average effect size of 0.40 from *The Applicability of Visible Learning to Higher Education* (Hattie, 2015, p. 87) could be incorporated into the inventory. Examples include pre- and post-tests to evaluate impact ($d = 0.91$) (p. 80), basing instruction on students' prior learning ($d = 0.85$) (p. 81), explicitly informing students about what

success looks like at the onset of lessons (d = 0.77) (p. 81), and establishing appropriate levels of challenge and never expecting "do your best" (d = 0.57) (p. 81).

Caution was in order, however, as the extent to which empirically based instructional influences were effective was contextual. As emphasized by the Marzano (n.d.) Research Laboratory,

> There are no high-yield instructional strategies; there are only high-probability strategies. The simple presence or absence of an instructional strategy does not define effectiveness, but it is rather the teacher's expertise in adapting that strategy to the classroom within the context of lesson segments that produces gains in student achievement. (p. 17)

In sum, research and personal experience has shown that teachers could and do make a difference. But not equally. To level the playing field and support the proliferation of learning with depth and breadth, the inventory could be adapted, expanded, and/or modified to meet faculty where they were and help them to create online course designs that were transparent, focused, and enriched with evidence-based instructional practices.

Conclusion

As described by Hixon, Barczyk, Ralston-Berg, & Buckenmeyer (2016), "Online students have multiple responsibilities and they need to ensure that the time spent on their coursework is beneficial and productive. They need their courses to be well-designed, consistently presented, easily navigable, and appropriately aligned" (para. 35). The current study supported this perspective and contributed to the literature by expanding the body of knowledge related to relationships between syllabus design and student

engagement, achievement, and satisfaction in the context of collegiate-level online courses.

Online education was continuing to grow and evolve with more and more students choosing the convenience and flexibility of online courses over traditional on-campus courses. With the rising interest in online learning, institutions will need ways to continuously evaluate online courses and educate online instructors to best serve increasing enrollments of diverse and often nontraditional learners.

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Appendix A

Online Syllabus Inventory (OSI)

SECTION	Sub-Section	ID	Criterion	YES	NO
		The syllabus includes…			
1. COURSE (5%)	General Info	1.1	The course number, section, name, credit hours, and term to which the syllabus applies.		
	Dates & Format	1.2	Official start and end dates for the course and on-campus meeting dates, times, and locations (if this is a hybrid course) or clear instructions that 100% of the course is to be completed in [LMS].		
	Access	1.3	Information about how to access the course in [LMS] the dates that access begins and ends, and how to get started.		
	Description	1.4	The exact and complete course description as found in the current undergraduate or graduate catalog, including prerequisites and co-requisites.		
	Other	1.5	Reference to corresponding teacher certification requirements, if applicable.		
2. INSTRUCTOR (10%)	Contact	2.1	The instructor's name, phone, email, and supervisor contact information (in case of emergency).		
	Biography	2.2	An up-to-date biography, including academic and professional credentials.		
	Availability	2.3	Information about when and how the instructor will be available to assist students.		
	Presence & Responsiveness	2.4	Comprehensive information about how you will be present and responsive throughout the course.		
3. LEARNING INTENTIONS (5%)	CLO/PLO/ILO	3.1	Intended Course Learning Outcomes (CLOs) and connections to corresponding PLOs (if applicable) and ILOs.		
4. GRADING (2%)	Final Grades	4.1	The method for determining the final grade.		
	Late Work	4.2	Information about late and missing assignments, including impact on the final grade.		
5. POLICIES & REQUIREMENTS (12%)	Institutional	5.1	The following statement: "For policies and procedures that apply to all courses at [institution], please refer to the [institutional] folder in the [LMS] Global Navigation Menu."		
	Academic Honesty	5.2	Information about course-specific measures to support academic honesty.		
	Attendance	5.3	The following statement: "As per University policy, initial student attendance in an online or hybrid course is confirmed via submission of the Course Ethics Agreement & Attendance Confirmation Survey—a required component of [institution's] comprehensive student authentication policy."		
	Books	5.4	Information about each required text, including title, author(s), publisher, edition, ISBN-13, cost, and procurement, if applicable.		
	Materials/Supplies	5.5	Information about required materials/supplies, including cost and procurement.		
	Optional/Recc Materials	5.6	A clear distinction between required and optional/recommended materials.		
	Portfolios	5.7	Comprehensive information about portfolio artifact(s) to be developed, if applicable.		
	Student Participation & Interaction	5.8	Requirements for student-student interaction (such as group work, group projects, peer reviews, or synchronous activities), if applicable.		
	Writing Style	5.9	Provides information about the required writing style (MLA, APA, Chicago, etc.), iapplicable.		
6. TECHNOLOGY & AUTHENTICATION (10%)	General Technology	6.1	The following statement: "For minimum hardware and software requirements applicable to all courses, please refer to the [institutional] folder in the [LMS] Global Navigation Menu."		

	Course-Specific Technology	6.2	Information about required course-specific technology (including version/release, cost, procurement, and privacy) and prerequisite minimum use requirements, if applicable.		
	Authentication Policy	6.3	The institutional information and links regarding student authentication and privacy.		
	Course Authentication Measures	6.4	Detailed information about course-specific authentication measures and corresponding safeguards to protect student privacy, cost (if applicable), and help resources.		
7. STUDENT SUPPORT SERVICES & RESOURCES (10%)	Student Support Services & Resources	7.1	The following statements: "For information about academic support services and resources, please refer to the [institutional] folder in the [LMS] Global Navigation Menu." "For information about technical support services and resources, please refer to Help (?) in the [institutional] folder in the [LMS] Global Navigation Menu." "For information about Canvas support services and resources, please refer to Help (?) in the [institutional] folder in the [LMS] Global Navigation Menu."		
	Accessibility	7.2	A link to [institution's] accessibility policies and services and comprehensive information about how the course supports accessibility.		
8. COURSE SCHEDULE (40%)		8.1	A course schedule that integrates... …a timeline or sequence of course modules, including but not limited to an Orientation Module (with reference to the Course Ethics Agreement & Attendance Confirmation Survey and Introductory Video), Content Modules, and a Concluding Module (with reference to the Student Authentication Survey and Course Evaluations).		
		8.2	…the learning intentions for each course module.		
		8.3	…readings, viewings, activities, experiences, and/or resources for learning.		
		8.4	...assignments and quizzes (assessments)--multiple opportunities for students to demonstrate and monitor/evaluate their learning with corresponding grading criteria, points, weights, and/or standards.		
		8.5	...a minimum of 37.5 clock hours of instruction, student work, and/or other academic activities per credit hour.		
		8.6	...due dates that are congruent with established institutional breaks and reporting dates for 4-week, midterm, and final grades as applicable.		
9. REFERENCES & COPYRIGHT (3%)	References	9.1	A reference list of course materials that are cited in the style appropriate to the discipline.		
	Copyright	9.2	A link to [institution's] Copyright Policy and information about how the course is compliant with this policy.		
10. SPECIAL (2%)		10.1	If applicable, program and/or school/campus specific requirements, including notification of merged courses or sections in Canvas.		
11. CHANGES (1%)		11.1	The following statement: "The course syllabus is subject to change if the instructor deems it necessary in order to accomplish the course objectives. Students will be notified in writing of all substantive changes to the course syllabus."		
INSTRUCTOR CONFIRMATION			I confirm this evaluation to be true. I also confirm the syllabus evaluated to be an accurate representation of the learning intentions, requirements, and experiences that students will encounter in my course.		

Appendix B

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

A mixed method analysis on the relationship between student engagement, achievement, satisfaction and syllabus design in a private Midwest university

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Principal Investigator: Hannah Kohler
Telephone:
E-mail:
Participant
Contact info

You are invited to participate in a research study conducted by Hannah Kohler under the guidance of Dr. Joseph Alsobrook. The purpose of this study is to analyze a possible relationship between student engagement, achievement, satisfaction and syllabus design and analysis. Among the same online courses taught by the same instructors, relationships will be analyzed in the domains of student achievement (by comparing past and present performance on specific assignments/assessments), student engagement (by comparing the frequency and extent to which students engage a course), student satisfaction (by comparing student end-of-course evaluations), faculty instruction (by comparing the frequency and extent to which faculty engage their courses), and faculty satisfaction (by pre-post faculty survey/satisfaction inventory).

Your participation will involve:

1. A 10-15 minute introductory meeting with me to review a syllabus inventory tool that I am using in my study.
2. A 10-15 minute live or phone interview with me after your course has concluded.
3. Granting the researcher access to student achievement, engagement, and satisfaction data from a previously taught course.
4. Approximately 30-50 participants will be involved in this research.
5. The researcher obtained approval from University administration to access student achievement, engagement, and satisfaction data.
6. There are no anticipated risks associated with this research.
7. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about evidence-based practices in online instruction.
8. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.
9. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study and the information collected will remain in the possession of the investigator in a safe location.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

Participant's Signature	Date	Participant's Printed Name
Signature of Principal Investigator		Investigator Printed Name

Vitae

Hannah Kohler earned a Bachelor of Arts in Music from Lindenwood University in 2011. Her graduate studies were completed from Lindenwood University while she worked in the Missouri Public School System teaching elementary music and middle and high school band. After completing her Master of Education degree, she worked at Lindenwood University as Assistant Director of Lindenwood Online. Ms. Kohler is pursuing a Doctor of Education degree with an emphasis in Instructional Leadership from the Lindenwood University School of Education and she anticipates completion in 2018. She lives in Warrenton, Missouri with her husband Rich and two children, Ryleigh and Logan.