

SWITCHING LEARNING MANAGEMENT SYSTEMS: COMPARING EFFECTS ON  
STUDENT PERCEPTION

by

Todd Price

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This dissertation was prepared under the direction of the candidate's dissertation advisor, Dr. Valerie Bryan, Department of Educational Leadership and Research Methodology, and has been approved by the members of the supervisory committee. It was submitted to the faculty of the College of Education and was accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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## ABSTRACT

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The computer industry does not understand how adults learn (Knowles, 1983). A profound statement made nearly 40 years ago. With the advancement of technology and the tremendous growth of online learning, the learning management system (LMS) has become the tool for delivering distance education. E-learning platforms have witnessed exponential uptake by the education and corporate sectors over the past three to five years (Wadhvani & Gankar, 2020). From this author's experience in the field of instructional design and online instruction, all LMSs are just a "database with a different user interface (Price, 2016)". But are there opposing perceptions from the online learner regarding two different systems of learning? With the migration of one LMS to another LMS at a large public state university, can an assumption be measured to determine significant differences between the two LMSs?

This quantitative research aims to answer if there are significant differences in online student perception between two different learning management systems. Using

responses to Instructor Evaluation Forms during four academic years (12 semesters), this study determined if a significant difference existed between the perceived quality of two learning management systems. Moreover, this study added to a minimal body of research regarding improving the quality of learning management systems based on the perception of online students.

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## CHAPTER I. INTRODUCTION

The development of information technologies has led to the acquisition of new applications in education (Binyamin et al., 2019). Although there has been a long history of distance education, the creation of online learning occurred just over two decades ago. Online learning meets a legitimate need for students as enrollment in online courses at universities and colleges continues to grow (Thomas & Graham, 2017). Many early forms of online learning involved the predominantly one-way delivery of learning content, thereby replicating traditional correspondence forms of distance education. These programs (which continue to the present day) tend to rely on online content management systems. Also known as learning management systems (LMSs), these systems have become increasingly attractive in the past few years as technical innovations have redefined the online teaching learning process. LMSs are software applications/tools designed to develop, manage, and deliver learning & training modules and services to academic and corporate users through electronic media (Chaurasiva & Sharma, 2016).

More than 800 LMS vendors compete in today's learning platforms marketplace in 2019 (up from 600 in 2014). These LMS vendors range from global software companies to small cloud vendors (Leh, 2016). Internationally, LMSs have become nearly ubiquitous across the higher education sector as a core component of e-learning (Twakyondo, 2012). The recent spike in LMS market vendors can be explained by a combination of factors such as the rise in cloud computing and a growing interest in

extended enterprise learning (Instructure, 2020). The relationship between education, learning, and technology is a never-ending cycle. As technology advances, it influences and sometimes changes the view of educational needs.

Considerable research has been conducted on student perceptions of online instruction. Various kinds of interaction, student satisfaction, collaboration, and course evaluation have been examined and measured. However, very little research has been carried out in the field of student feedback on LMSs.

### **Statement of Problem**

Educational changes being experienced in the Internet age are complex and often compromised. Both the Internet and education are concerned with information exchange, communication, and the creation of knowledge (Selwyn, 2013). As previously stated, advances in technology transform education. This paradigm shift requires in-depth research to determine if the application of technology helps or hinders learners. On the basis thereof, it is not uncommon for educational institutions to haphazardly transition from one LMS to another. Typically, such a transition presents a massive challenge for the University staff, faculty, and students (Ekuase-Anwansedo & Smith, 2019). Factors affecting the decision to migrate from one management system will be addressed later within this research. But the focus should be on the impact of migrating from one LMS to another.

### **Purpose of Study**

The purpose of this study was to examine student perception between two learning management systems at a Florida public university. Archived data was collected and limited to one Florida public university where migration from an old to new LMS

occurred. Student responses from the Florida public university were used to determine if a significant difference existed between both LMSs.

### **Significance of Study**

This study contributes to current yet minimal research regarding student feedback on LMSs. Questions that framed the study were:

1. What are the deciding factors of an educational institution to switch from one LMS to another LMS?
2. What appears to be lost in changing an LMS regarding how students perceive and benefit from this change? (The decision to switch from one LMS to another considers administrative and instructor needs but could have a drastic outcome for online student achievement. If you do not know what your learners think about your learning management system software (LMS), your lesson material, and the teaching methods you are using, then your course will inevitably grind to a halt (Ingwersen, 2016)).

### **Research Question**

The following research question guided this study: Are there significant differences in online student perception between two different learning management systems? Additional inquiry would discover whether there is significant differentiation in online student perception between two different LMSs within colleges. The resulting findings would assist in the examination of what variables would influence significant differences in online student perception between two different LMSs.

## Study Sample

The study sample consisted of only online students enrolled at one State of Florida public university during targeted terms. Students are provided an opportunity to provide anonymous input at the end of a term to evaluate the quality of instruction. Results of evaluations are a means to produce feedback on quality instruction.

## Definitions

Some terms may be unfamiliar to readers, or meanings of specific terms can vary depending on the context, conceptual framework, or field of study. The following definitions will ensure understanding for key terminology, concepts, or terms that are not widely known.

*API.* An API (application programming interface) is a software-to-software interface that defines the contract for applications to talk to each other over a network without user interaction (De, 2017).

*Asynchronous learning.* Learning is self-paced, and users have access to previous activities contributed by others from the same group (Hiltz & Goldman, 2005).

*Blackboard.* A proprietary Web-based learning management system.

*Blended Learning:* A learning model or approach that mixes both web-based, mobile technologies, and classroom technologies for on-campus courses or programs (Kitchenham, 2011).

*Canvas.* An open-source Web-based learning management system.

*Cloud Computing.* A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (Ruparelia, 2008).

*Content management system.* Also known by the acronym CMS, a content management system is a software application that manage the creation and modification of digital content.

*COVID-19.* Acronym for *coronavirus disease of 2019*.

*eCommerce.* Selling items over the World Wide Web (May, 2020).

*eLearning.* eLearning involves the use of electronic communication technologies to deliver text, audio, image, animation, and video in education (Sethi et al., 2019).

*Education informatization construction.* Development strategy of how educational is becoming information-based.

*Extended enterprise learning.* Training provided to learners outside of an organization.

*HOV.* Acronym for *homogeneity of variance*.

*HTML5.* A collection of technologies that have been brought under a single umbrella name (Html5, 2013).

*Hybrid.* Blended learning that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods requiring the physical presence of both teacher and student,

*HyFlex.* Teachers are teaching students at the same time in a physical classroom and synchronously online through video-conferencing software (Kohnke & Moorhouse, 2021).

*ID.* Acronym for instructional design/designer

*Instructor evaluation form.* An instrument to be used by students in evaluating faculty (Kapel, 1974).



*IRB.* An acronym for *institutional review board*. This administrative body was established to protect the rights and welfare of human research subjects recruited to participate in research activities conducted under the auspices of the institution with which it is affiliated.

*IT.* Acronym for *Information Technology*.

*Learning management system.* A learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and evaluate student performance.

*LTI.* An acronym for *learning tools interoperability*. An education technology standard specifies a method for a learning management system to invoke and communicate with external systems (IMS Global Learning Consortium, 2008).

*LXP.* An acronym for *Learning Experience Platform*. Provides a much more integrated, targeted, and individual training journey for employees, putting them in charge of their training destinies (Tassetto, 2019).

*M-learning.* Acronym for mobile learning

*Migration.* Transferring all content from one LMS to another.

*Online.* A flexible instructional delivery system encompassing any learning that takes place solely via the Internet and does not include any type of blended learning (e.g., Hybrid or HyFlex).

*Platform.* Online education hub providing a set of features to support educational activities for distance education.

*Remote learning.* Student and the educator are not physically present in a traditional classroom environment.

*SPOT.* An acronym for *student perception of teaching* is an anonymous and effective tool given at the end of each semester to help evaluate the quality of instruction and improve the University's education standards.

*SPSS.* An acronym for *statistical package for the social sciences*, it is a software program for statistical analysis in social science.

*Synchronous learning.* Learning occurs in the same place, at the same time, in order for learning to take place.

*UI.* An acronym for *user interface* to describe anything a user may interact with to use a digital product or service.

*UX.* An acronym for *user experience* describes what an individual interacting with a product or service takes away from the entire experience.

### **Delimitations**

Several delimitations chosen by this researcher describe the boundaries set for this study. Boundaries set forth included only online students and online courses at a Florida public four-year public institution. The *student perception of teaching* is an online tool provided to online students at the end of each semester to help evaluate the quality of instruction and improve the University's education standards. This evaluation assessment tool was used for data collection.

Semesters measured were approximately 15 weeks long, where the fall term usually runs from August to December *while* the spring semester runs from January to May. Shortened summer terms were not measured due to the rigorous break from the

traditional 13 to 15-week semester. The summer terms are generally shorter in length and viewed as a rigorous break from the traditional course format.

### **Limitations**

Several limitations, beyond the control of the researcher, were initially identified. One institution within the state of Florida was used for the study. Furthermore, not all students within the identified institution completed the end-of-term instructor evaluation form. Learner perceptions of an LMS could differ depending on the institution's location and its respective student demographics. Consequently, student identifiers (e.g., gender, age, social-economic status, and learning disabilities) could not be included as student feedback is anonymous. Due to the anonymity of student feedback within SPOTS, distinctions cannot be made if students were exposed to both course frameworks: Canvas or Blackboard; as a result, information that students have experience with LMS cannot be collected.

The assessment of instruction varies across universities and states. Comparisons can only be made between the same course content in LMS(a) and LMS(b) in different terms. In addition, unique student feedback can only be measured in one LMS, not both. Moreover, only the two most widely used academic LMSs could be used for comparison. Because academic cultures vary from school to school, patterns observed in the present data could differ at other schools.

Comparing student satisfaction across course discipline between two dissimilar LMSs becomes difficult. This type of comparison is rendered problematic by the number of intervening variables such as different teachers for courses in the two formats and differences in student entry skills and achievement levels (Roblyer et al., 2007). Not all

courses have the same instructor, course content, assignments, or textbooks which have a direct impact on student satisfaction.

### **Chapter Summary**

The seismic shift in the delivery of educational content disrupted the digital learning experience, aiding teachers in instruction and students in learning. An LMS is not another layer of institutional complexity; it is a solution for huge logistical burdens for administrators and instructors.

For administrators, an LMS saves you time and money as it is easy to implement with a shallow learning curve for users (McKinsey, 2018). For educators, an LMS is infinitely personalized, so work generated by the educator can be tailored to the needs of every student (McKinsey, 2018).

What appears to be lost in the acquisition of an LMS is how students will perceive and benefit from said software. Student perception of online instruction exists, but their efficacy on the effectiveness of an LMS is unknown. At the center of education are the students. With little research in student perception of the quality of online instruction's delivery system (i.e., LMS), this research addressed student feedback on LMSs.

## CHAPTER II. LITERATURE REVIEW

There is no perfect LMS (Stein, 2014). The following literature review provides a historical and comparative perception of learning management systems (LMSs) from the student perspective. Countless studies have been conducted in the field of online learning. Different factors influencing online learning, such as the various kinds of interaction, the student satisfaction, collaboration, and course evaluation, have all been examined.

As of the year 2020, very little research has been conducted in the field of student feedback on LMSs. Weller (2020) states the history of educational technology is under-documented. The literature review for this study focused on: the exploration of the online learning, LMS similarities and difference; LMS market survey; how a higher education institution made decisions to purchase and implement an LMS; the process of changing an existing LMS; how to define student feedback; and the examination of students' perception as a reliable indicator of LMS effectiveness. This literature review discusses these issues.

### **Online Learning**

Distance education, also known as distance learning, online learning, e-learning, and blended learning, offers instructors and students a flexible learning environment in terms of location and time (Aharony, 2011). Although there has been a long history of distance education, the creation of online learning occurred just over two decades ago.

But how is online education delivered? At this point, an information system must be used for the vast repository of information and training aides for storing and tracking student information and resources to improve the learning capabilities of the students.

### **The LMS**

Learning management system is commonly referred to as 'LMS,' which is its abbreviation. "Learning Management System (LMS) Market Share" (2018) states that at its heart, it is software that was formed with a purpose to assist the instructors who impart and encourage the student's education. The LMS can help instructors administer, document, monitor, report, and deliver educational courses online. The LMS can also help the student to be more actively involved in a tailored learning experience. They help the student do tasks easily and effectively and offers a variety of student evaluation methods (Almoeather, 2020).

In the past, instructors had to perform all tasks. But with an LMS, instructors can now be freed of tedious tasks and concentrate more on the engaging experiences that enhance the teaching. In the past few years, this software has made a name for itself in the education industry.

Most higher education institutions use an LMS to deliver courses in some sort of format (e.g., HyFlex, hybrid, or online). Blackboard and Canvas were the two LMSs that were used for analyzing student perception of online LSMs at a Florida public university. Each LMS solution targets the higher education market while integrating similar features such as, but not limited to, assessments, discussions, and dedicated learning profiles.

## **LMS History**

The first LMS program can be traced back to 1924 when psychology professor Sidney Pressey invented an electronic teaching device that resembles a window that administered multiple-choice questions to learners. Hence was born the first electronic teaching device. According to Pressy, the main idea behind this teaching device was to allow teachers to focus on more inspirational and thought-stimulating activities for their students (Pressey, 1926, as cited in Kadosh & Dowker, 2015). First appearing in their current form in the 1990s, LMSs allowed educators to harness the power of the Internet to disseminate course content to students remotely (John, 2014). Since then, LMS applications have become increasingly popular in the academe, enabling educators and learners to access educational resources in a variety of formats.

## **LMS Stakeholders**

In an organizational context, a stakeholder is an organization's constituency (Thompson & Strickland, 2001). Within the context of this study, there are four stakeholder groups that are directly involved in LMS: students, faculty, administrators, and IT staff. Each of these participants hold slightly differing sets of wants and needs, but they also share some commonalities and interact with one another in a variety of ways. Wagner et al. (2008) suggest that each stakeholder group has an important role to play while working together towards the common goal of enhancing the overall learning experience.

The implementation of an LMS involves the cooperation of each stakeholder. And a transition from one LMS to another would entail communication between each group to ensure responsibilities are clear for each group. To this effect, when institutions

undertake a substantial e-learning initiative, they should strive to involve a cross-functional team with representation from each relevant stakeholder group (Wagner et al., 2008).

### **LMS Models**

LMS models differ according to their elements. These are the primary elements that influence most decisions concerning the system of choice. Babo and Azevedo (2012) state that most systems are not just one or the other but are somewhere on a continuum between the extremes within each element.

Initially, the source of all LMSs was developed in-house and depended upon the institutional programmers' support. Most of these systems possessed limited functionality, and they were difficult to modify or improve (Babo & Azevedo, 2012). As a result, many in-house developed systems no longer exist as they were either too costly to maintain and support or were transferred to businesses that have used them as proprietary systems.

Proprietary systems comprise the largest block of systems in operation today (Babo & Azevedo, 2012). Although proprietary systems differ based on functionality and provide a basic set of LMS functions, they are not identical. As with any marketplace, constant change occurs within the LMS industry. As seen in Figure 1, LMS companies either leave the industry or become absorbed by one of the competitors.

Open source, or free source, is the last type of source to be identified. These systems are supported by a network of programmers around the globe who provide updates to the systems on an almost constant basis (Pan & Bonk, 2007). These open-source systems are free to own. However, most are available through a supplier who will





## **Blackboard**

The privately held company Blackboard is an education technology company offering innovative technologies and solutions. The company provides solutions to higher education, further education, and corporate. Blackboard operates in Asia Pacific, the US, Europe, Middle East, and Africa. The company is headquartered in Washington, the District of Columbia. Identically titled, Blackboard is their company's LMS for online teaching, learning, community building, and knowledge sharing. In the field of digital (E-Learning) learning market, Blackboard's name is known by almost everyone (Jianhong & Furong, 2020). First available in 1998, Blackboard has used the acquisition of other companies as a strategy to both limit competitors and enter new markets.

According to Alshwaier et al. (2012), Blackboard is a compound learning environment with the capacity to take over various fields of teaching procedures that take advantage of the technology variety. Blackboard is a learning tool that supports lecturers for online material approach to students, online assignments, and even for marking and giving comments for students' report (Nguyen, 2021). According to Alsalloum and Radwan (2013), Blackboard LMS performs three basic functions: It provides learning interaction tools while studying, including announcement, timing, tasks, grades, user manual, and notebook; it displays the content in various ways such as text with pictures, animation, documents and files, books and references, and important, relevant links by clicking (course content); and it offers three ways of communication for learners with peers and instructors by sending and receiving e-mails, discussion boards, and virtual classrooms.

## **Canvas**

Like Blackboard, Canvas is a learning management system that allows students to access course contents and assignments online (Lewis, 2019). Canvas LMS is an open web-based software that enables institutions to manage digital learning, educators to create and present online learning materials, and assess student learning. It also allows students to engage in courses and receive feedback about skill development and learning achievement (Instructure, 2021). Founded in 2008, Instructure, Inc., is an educational technology company based in Salt Lake City, Utah, and the developer and publisher of Canvas. Originally named Instructure, the founders changed the name of the software to Canvas.

Canvas supports state education leaders by providing a platform that encourages integration with other leading educational technologies based on open standards. The open interoperability between platforms helps maximize instructional time, so teachers are free to work with students individually, address their social or emotional needs, and differentiate or personalize instruction (PR Newswire, 2020). Canvas also supports and enhances instructional strategies by helping measure student progress, instructional strategies, and curriculum effectiveness while allowing educators to address their own growth and professional development.

### **Purchase and Implementation of an LMS**

When purchasing an LMS, some academic institutions take the logical approach using evidence and reasons to draw conclusions and make decisions. The acquisition of an LMS may also be random and is habitually founded on someone recalling an LMS' brand name. Other institutions might base their acquisition of an LMS by attending

educational technology shows, obtaining brochures, and researching vendors. Whichever LMS has been purchased and implemented, institutions eventually learn the hard way what works and what does not, and this experience puts them in a better position to buy their next LMS. This approach means that they can continue buying "less bad" LMSs, but they never find the "perfect LMS" (Little, 2015). In any case, this is a recipe for frustration – for administrators and users – as well as a waste of (Little, 2015).

### **Why Change an LMS?**

"The non-availability of high-quality support is still the main reason why clients abandon their LMS," commented Craig. "On the other side of the equation, vendors are increasingly tempting buyers by bundling courses with the LMS at no extra charge" (Little, 2015, page 381). As online learning has gone mainstream, it has never been more important to choose an educational LMS tailored to an institution's mission and goals.

What are deciding factors of an organization to switch from Blackboard to Canvas? Several reasons were provided to all stakeholders, such as faculty committee recommendation, positive student feedback, the application was easy to use, mobile, and responsive, was hosted in the cloud with 99% uptime, and uses the latest HTML5, Rest API, and LTI Standards.

In 2014, the Florida Board of Governors' Innovation and Online Committee began exploring learning management system recommendations made by the Task Force on Postsecondary Online Education in Florida. The committee proposed to select and implement a common LMS within the University System of Florida. As a result of the selection of a common LMS (Canvas), the targeted institution for this study transitioned

from one LMS (Blackboard) to another (Canvas). No less important was that this study's institution's Blackboard contract was set to expire in June 2017.

### **Usefulness of Student Feedback**

There is a gap in the e-learning literature, reflecting a lack of understanding of students' flow experience using online interactive systems (Khan et al., 2017). Learner feedback about learning management system software (LMS) is vital to the success of the online course's lesson material and teaching methods (Ingwersen, 2016). Student feedback can be defined as the use of formal processes to gather information from students about their perceptions of teacher practices, teacher effectiveness and the quality of educational programs (Richardson, 2005). The practice of collecting feedback from students is well established at the university level. Marsh (1987) concluded that “student ratings are clearly multidimensional, quite reliable, reasonably valid, relatively uncontaminated by many variables often seen as sources of potential bias, and are seen to be useful by students, faculty, and administrators” (p. 369).

However, if student feedback is valid and insightful to all stakeholders, one cannot assume that this feedback will lead to improvement or significantly impact change. Assessing student satisfaction can play a major role in evaluating the effectiveness of an LMS. Gathering student feedback must be carefully approached by how and what questions are asked to obtain quality responses.

### **Gartner's Hype Cycle**

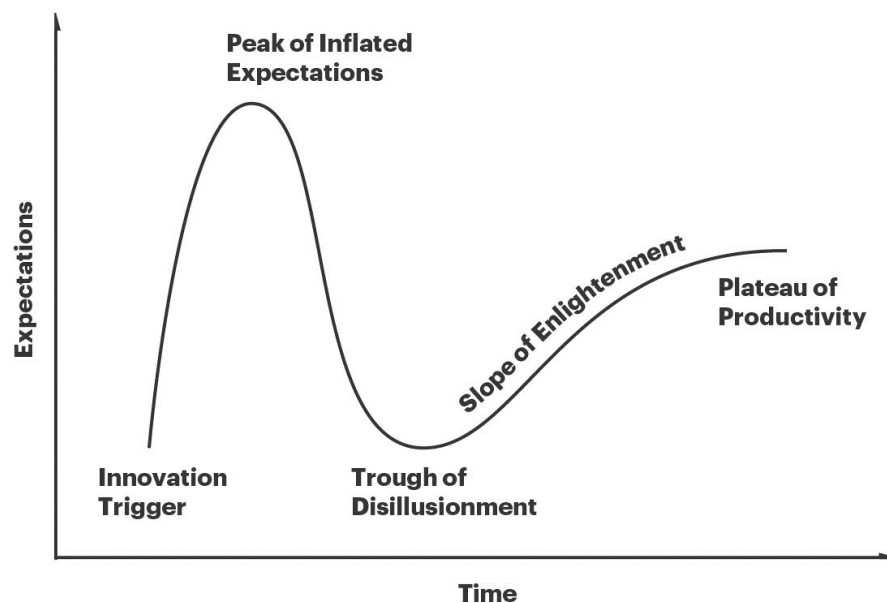
As shown in the Figure 1, the LMS market share indicates that Canvas has become the preferred online learning management system as it has unseated Blackboard as the LMS market leader. Was this shift in LMS market share the result of new

technology? Canvas states that it is the learning platform that makes teaching and learning (and implementation and adoption and customer support and student success and bragging to your non-Canvas-using peers) easier (Instructure, 2021). When new technologies make bold promises, in this case, another LMS, how do you discern the hype from what's viable and worthwhile?

Our attention must turn to Gartner's *Hype Cycle* to provide some clarity. Gartner's Hype Cycle provides a graphic representation of the maturity and adoption of technologies and applications and how they are potentially relevant to solving real business problems and exploiting new opportunities (Hype Cycle Research Methodology, n.d.). As seen in Figure 2, the methodology provides a view of how a technology or application will evolve, providing a sound source of insight to manage its deployment within the context of your specific business goals.

**Figure 2**

*Gartner's Hype Cycle*



Gartner's *Hype Cycle* drills down into the five critical phases of a technology's life cycle, which include: Innovation trigger, the peak of inflated expectations, the trough of disillusionment, the slope of enlightenment, and the plateau of productivity. The reader must note that this research begins at the *innovation trigger* on the cycle.

Although the results of this research are not predicting the current LMS life cycle's trajectory, outcomes could provide a clear indicator as to what phase this technology resides within Gartner's *Hype Cycle*. If the reader is a decision-maker for LMS transition, it would be in their best interest to compare the results of this research with Gartner's *Hype Cycle*. Gartner's *Hype Cycle* may help separate hype from the real drivers of a technology's commercial promise, reduce the risk of your technology investment decisions, and compare your understanding of a technology's business value with the objectivity of experienced IT analysts (Hype Cycle Research Methodology, n.d.).

### **Chapter Summary**

This literature review has provided a historical and comparative perception of learning management systems (LMSs). Factors influencing online learning, such as the various kinds of interaction, student satisfaction, collaboration, and course evaluation, have all been examined. However, scant research has been carried out in the field related to student feedback on LMSs. Stein (2014) states that there is no perfect LMS. Exploring online learning, LMSs, and its marketplace, higher education decision making to purchase, implement, or change an existing LMS, and student perception as a reliable indicator of LMS effectiveness has been addressed.

The next chapter will attempt to describe the methodology used in the study to examine student perception of online teaching between two learning management systems at a Florida public university.



## CHAPTER III. METHODS

This study is essential to the understanding of the perception of online students about the quality of instruction and course content delivered using two different learning management systems (LMSs). Both LMSs were utilized at one public University in the state of Florida. Student perception can critically reflect how online content is delivered, significantly impacting student achievement and satisfaction. An overview of this study's methodology is provided in this chapter.

### **Research Design**

This study accentuates the perception of online students in the quality and delivery of online instruction. The instructor evaluation form was used to compare both LMSs (i.e., Blackboard vs. Canvas). The Florida public university administered the form. The instructor evaluation form continues to be used as a tool given at the end of each semester to evaluate the quality of the University's instruction. These instructor evaluation forms are used to provide the necessary quantitative data required to answer the research question.

The timeframe initially identified was between the academic years of 2015 through 2019 to include each entire semester. Full semesters divided the academic year into two pieces, a fall semester, and a spring semester. Semesters are approximately 15 weeks long, where the fall term usually runs from August to December and the spring semester January to May. Considered too intensive for learners, the shortened summer

terms were not measured due to the rigorous break from the traditional 13 to 15-week semester.

**Figure 3**

*Archived Data Retrieval Gantt Chart*

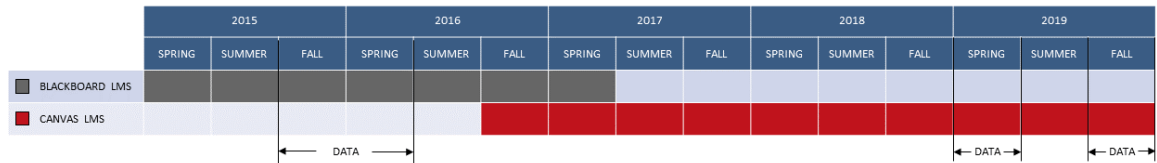


Figure 3 represents a simplified Gantt chart illustrating the use of two LMSs and archived data retrieved from the targeted University. Blackboard data only included the Fall 2015 and Spring 2016 semesters. Although data exist immediately after the LMS transition starting Fall 2017, Canvas data included Spring and Fall 2019 semesters. Data retrieved during these time periods eliminates any possibility that students were enrolled, or faculty instructed within both LMSs simultaneously.

Training is an integral aspect for faculty acceptance of new technologies, particularly a new LMS (Bove & Conklin, 2020). Professional development has become a way to credential and train faculty to teach in online environments (Brown, 2018). To account for learning barriers and disruptions for faculty learning another LMS for the first time, a decision was made to retrieve the latest archived data for Canvas courses. This assumed that almost two full years of exposure to the new LMS would be sufficient for comparison to the previous LMS.

Once the University's institutional review board approved the study (IRB), this researcher collected all the pertinent data contained within the instructor evaluation form. SPSS software was utilized to analyze the given data to answer this study's research question. Instructional evaluation form data was divided accordingly between LMSs; that

is, evaluations from students' perception of courses offered in Blackboard and students' perception of courses offered in Canvas. This study, simply put, was a comparison study linking instructor evaluation forms and two different LMSs with a view to discovering something about two things being compared.

### **Research Questions**

The following research question guided this study: Are there significant differences in online student perception between the two different learning management systems Blackboard and Canvas? Additional inquiry will yield the answer as to whether there is significant differentiation in online student perception between two different LMSs within colleges. Resulting findings will support examination of what variables would influence significant differences in online student perception between the two LMSs.

### **Sample**

The study sample consisted of only online students enrolled in online courses at one State of Florida public university during targeted terms. Students are provided an opportunity to provide anonymous input at the end of a term to evaluate the quality of instruction. Results of evaluations are a means to produce feedback on the quality of instruction. The University met the following criteria: offer online courses; collect end of term online course surveys and ensure confidentiality and anonymity of survey participants. When all benchmarks were met and to ensure privacy and identity protection, the chosen Florida public university was given a pseudonym name *University Python*.

Targeted courses earmarked for research included all courses that were defined by *University Python's* course scheduling process as having an instructional method classified as *fully online*. Through these courses, instructor evaluation form archival data will be requested from the University's IRB and extracted for statistical analysis. Note that no identifiers of any type were used in this study.

### **Survey Instrumentation**

The instructor evaluation form was used to evaluate students' perception of online instructors at the Florida public university. Permission was requested and obtained from the institution to collect and evaluate said form's archived data; furthermore, this researcher did not change or modify the survey instrument.

The earmarked survey instrument is an essential measurement for student perception of whether the online course was effective: rate the quality of instruction of their instructor (See Appendix A). This measurement will be the only item used for analysis.

Although students evaluate faculty and not the LMS, it is an assumption that the instructor evaluation form query best answers the research question. Moreover, the measurement was not altered or modified from one LMS to another. Students who completed the instructor evaluation form and answered the identified question selected among one of the five options: excellent (1), very good (2), good (3), fair (4), and poor (5); a Likert-type scale that offered students the ability to respond positively, negatively, or somewhere in-between. The greater the mean score, the lower the average student rating.

The instructor evaluation form is anonymous; as a result, no demographic variables were collected or analyzed. Although the identified institution's survey instrument has been revised since its initial implementation, the instructor evaluation form used during the timeframe of this study remained unchanged, allowing for all survey data to align based on identified questions and scoring. The information provided to the researcher on the *Instructor Evaluation Form* included the following: academic term, the course title, campus (e.g., course delivery), college, student enrollment, and number of student responses. The information was public and could also be retrieved via the institution's SPOT webpage. However, retrieval of data can only be queried one course or instructor at a time, thus, the need for IRB request. At the submission of this research proposal, an undefined alpha was used for the reliable measure of internal consistency due to how closely related the set of items were as a group.

### **Data Collection**

The Florida public institution's instructor evaluation form was anticipated to provide the necessary quantitative archival data used for this research. The following two anticipated data collection steps were completed. First, the researcher request for archival data was approved by the University's IRB to proceed with this study. Second, after receiving approval, the researcher successfully acquired archival data from the targeted University. It must be noted that the data collected for this study were a fixed data set.

### **Data Analysis**

Data collected from the instructor evaluation form was analyzed using SPSS Statistics, version 27. The software assisted this researcher in determining if student perception of online instruction differs between two LMSs. Data in this study remained

confidential during the collection and analysis phase; in turn, once the results were tabulated, a method of overwriting the data ensured that all data would be destroyed and removed from the hard disk drive or other digital media.

Tabulation of data identified terms, courses, instructors, mean score, standard deviation, and LMS group (i.e., Blackboard or Canvas). An ANOVA was used to compare Blackboard and Canvas LMS groups split on one independent variable (called *factor*). The primary purpose was to understand if there was an interaction between Blackboard and Canvas and their respective SPOT mean scores. In short, the ANOVA was anticipated to show the difference in SPOT mean scores.

### **Chapter Summary**

A quantitative study was selected to evaluate the potential effects two separate LMSs may have on students' perception at one public University in Florida. Student information on perception was determined to assist in answering the research question for this study possibly. Said information was retrieved from identified question(s) contained within an instructor evaluation form. After following data collection steps, data were tabulated and analyzed using SPSS to better understand the possible effect two LMSs may have on students' perception of online instruction. ANOVAs were anticipated to answer all stated or newly found research questions.

## CHAPTER IV. RESULTS

This chapter reports the archival data obtained from the SPOT tool as previously described. This research aimed to determine if there were significant differences in online student perception between two different learning management systems. This chapter answers the research question in the study by providing the results revealed through the data collection and data analysis procedures. The analysis included, but was not limited to, frequency, mean, standard deviation, min-max, one-way factorial, and two-way ANOVAs, and Scheffe post hoc tests to investigate the results in-depth.

### **Sample and Response Rate**

Revisiting Chapter 3, the sample for this study included SPOT responses for online students who were taught using one of two LMSs (i.e., Blackboard or Canvas) within a Florida 4-year public institution. During the academic terms of Fall 2015, Spring 2016, Spring 2019, and Fall 2019 terms, a total of 66,996 students were enrolled within online courses. Total students included both undergraduate and graduate online courses and the use of either Blackboard or Canvas LMS for course delivery. Based on 31,221 SPOT respondents, the total response rate was 46.60%. Table 1 details enrollment, number of respondents, and respective percentage rates for each sample group.

**Table 1***Enrollment and Respondents by LMS*

Group	# of Enrollments	# of Respondents	% SPOTS
Blackboard	25,375	12,623	49.75%
Canvas	41,621	18,598	44.68%
Total	66,996	31,221	46.60%

Table 2 details the percentage of online course SPOT respondents drilled down by college, term, and the LMS.

**Table 2***Percent of Online Course SPOT Respondents by College, Term, and LMS*

College	Fall 2015 (Blackboard)	Spring 2016 (Blackboard)	Spring 2019 (Canvas)	Fall 2019 (Canvas)
Arts & Letters	50.19%	50.51%	47.07%	39.26%
Business	43.00%	47.49%	45.78%	37.74%
Design and Social Inquiry	60.74%	60.96%	61.82%	48.86%
Education	52.63%	53.88%	52.51%	42.44%
Engineering	43.60%	43.23%	50.61%	47.60%
Nursing	61.02%	50.57%	47.40%	42.39%
Science	45.06%	44.95%	42.19%	34.76%

**Analysis of Research Question**

This study focused on online student perception between two different learning management systems at a public university in Florida during similar terms. Several assumptions were verified before proceeding to an ANOVA test. The Levene's test used the level of significance prior to the ANOVA in order to test the assumption of homogeneity of variance.



### Levene's Test

Levene's test was used to verify the assumption that variances (SPOT mean scores) are equal across groups. Using the results detailed in Table 3, homogeneity of variances was all non-significant. As this study compared the means of two groups, the standard deviations for each group will not be identical.

**Table 3**

*Levene's Test of Homogeneity of Variances*

SPOT MEAN	Levene Statistic	df1	df2	<i>p</i>
Based on Mean	2.822	1	3487	.093
Based on Median	1.964	1	3487	.161
Based on Median and with adjusted df	1.964	1	3483.299	.161
Based on trimmed mean	2.507	1	3487	.113

### ANOVA Results

An ANOVA was conducted to examine the effects of SPOT mean scores and two LMSs (e.g., Blackboard and Canvas). Before performing the ANOVA, several assumptions were verified. Homogeneity of variances was assessed by Levene's t-test. Effect size results reveal how much the independent variable (LMS) had affected the dependent variable (Mean Score). Results within Table 4 yield  $p < 0.05$ ; thus, the test hypothesis is false, and should be rejected. Measuring the effect size of different variables found the Partial Eta Square Effect Size for LMS = .003.

**Table 4***ANOVA results*

Source	Type III Sum of Squares	df	Mean Square	F	<i>p</i>	Partial Eta Squared
Corrected Model	3.806 <sup>a</sup>	1	3.806	9.840	.002	.003
Intercept	11022.695	1	11022.695	28497.846	<.001	.891
LMS	3.806	1	3.806	9.840	.002	.003
Error	1348.738	3487				
Total	12846.593	3498				
Corrected Total	1352.544	3488				

*Note.* Test to find if results are significant.

<sup>a</sup> R Squared = .003 (Adjusted R Squared = .003)

### **Additional Results**

As an exploratory exercise, Levene's test of equality of error variances (Table 5), test of between-subject effects (Table 6), and a two-way ANOVA (Table 6) were conducted to examine the possible interaction of SPOT mean scores between colleges and LMSs. Referring to Table 6, LMS, College, and interaction of LMS by College yield very small effect sizes being < .30; thus, indicating small differences between the means of the groups for these three effects. Due to the finding of a significant difference in evaluation ratings between colleges, a Scheffe' post hoc test was conducted to determine between which colleges these rating differences existed. Table 8 shows evidence that Engineering and Computer Science and Sciences' five (5) scale step Likert ratings were significantly lower than the ratings for Design and Social Inquiry and Arts and Letters;

however, Education, Nursing, and Business's ratings were not significantly different than any of the colleges/schools mentioned above.

**Table 5**

*Levene's Test of Equality of Error Variances*

SPOT MEAN <sup>a</sup>	Levene Statistic	df1	df2	<i>p</i>
Based on Mean	9.295	13	3475	<.001
Based on Median	6.591	13	3475	<.001
Based on Median and with adjusted df	6.591	13	3141.063	<.001
Based on trimmed mean <sup>b</sup>	8.231	13	3475	<.001

*Note.* Tests the null hypothesis that the error variance of the dependent variable is equal across groups a and b.

<sup>a</sup> Dependent variable: MEAN\_SCORE

<sup>b</sup> Design: Intercept + LMS + COLLEGE + LMS \* COLLEGE

**Table 6**

*Two-way ANOVA: Tests of Between-Subjects Effects*

Source	Type III Sum of Squares	df	Mean Square	F	<i>p</i>	Partial Eta Squared
Corrected Model	45.563 <sup>a</sup>	13	3.497	9.297	<.001	.034
Intercept	6527.377	1	6527.377	17353.648	.000	.833
COLLEGE	17.934	6	2.989	7.946	<.001	.014
LMS	9.727	1	9.727	25.860	<.001	.007
COLLEGE * LMS	1.431	6	.238	.634	.703	.001
Error	1307.082	3475	.376			
Total	12846.593	3489				
Corrected Total	1352.544	3488				

Note. Test for ability to account for variation in the dependent variable.

<sup>a</sup> R Squared = .034 (Adjusted R Squared = .030)

**Table 7**

*Scheffe Test: Multiple Comparisons*

(I) College and (J) Description	Mean Difference (I-J)	Std. Error	<i>p</i>	95% Confidence Interval	
				Lower Bound	Upper Bound
<b>Arts &amp; Letters</b>					
Business	-.1728	.03337	<.001	-.2913	-.0543
Design and Social Inquiry	.0390	.04083	.989	-.1059	.1840
Education	-.0803	.03724	.590	-.2125	.0519
Engineering	-.2392	.03809	<.001	-.3745	-.1040
Nursing	-.1027	.04597	.545	-.2659	.0606
Science	-.2396	.04516	<.001	-.3999	-.0792
<b>Business</b>					
Arts & Letters	.1728	.03337	<.001	.0543	.2913
Design and Social Inquiry	.2118	.03675	<.001	.0813	.3423
Education	.0925	.03271	.239	-.0236	.2087
Engineering	-.0665	.03368	.691	-.1860	.0531
Nursing	.0701	.04239	.841	-.0804	.2206
Science	-.0668	.04151	.859	-.2141	.0806
<b>Design and Social Inquiry</b>					
Arts & Letters	-.0390	.04083	.989	-.1840	.1059
Business	-.2118	.03675	<.001	-.3423	-.0813
Education	-.1193	.04030	.187	-.2624	.0238
Engineering	-.2783	.04109	<.001	-.4242	-.1324
Nursing	-.1417	.04848	.201	-.3139	.0304
Science	-.2786	.04771	<.001	-.4480	-.1092
<b>Education</b>					
Arts & Letters	.0803	.03724	.590	-.0519	.2125

(I) College and (J) Description	Mean Difference (I-J)	Std. Error	<i>p</i>	95% Confidence Interval	
				Lower Bound	Upper Bound
Business	-.0925	.03271	.239	-.2087	.0236
Design and Social Inquiry	.1193	.04030	.187	-.0238	.2624
Engineering	-.1590	.03752	.006	-.2922	-.0257
Nursing	-.0224	.04550	1.000	-.1839	.1391
Science	-.1593	.04468	.048	-.3179	-.0006
Engineering: Arts					
Arts & Letters	.2392	.03809	<.001	.1040	.3745
Business	.0665	.03368	.691	-.0531	.1860
Design and Social Inquiry	.2783	.04109	<.001	.1324	.4242
Education	.1590	.03752	.006	.0257	.2922
Nursing	.1366	.04620	.189	-.0275	.3006
Science	-.0003	.04539	1.000	-.1615	.1609
Nursing					
Arts & Letters	.1027	.04597	.545	-.0606	.2659
Business	-.0701	.04239	.841	-.2206	.0804
Design and Social Inquiry	.1417	.04848	.201	-.0304	.3139
Education	.0224	.04550	1.000	-.1391	.1839
Engineering	-.1366	.04620	.189	-.3006	.0275
Science	-.1369	.05218	.332	-.3221	.0484
Science					
Arts & Letters	.2396	.04516	<.001	.0792	.3999
Business	.0668	.04151	.859	-.0806	.2141
Design and Social Inquiry	.2786	.04771	<.001	.1092	.4480
Education	.1593	.04468	.048	.0006	.3179
Engineering	.0003	.04539	1.000	-.1609	.1615
Nursing	.1369	.05218	.332	-.0484	.3221

**Table 8***Scheffe Test: Homogeneous Subsets*

College Description	N	Subset				
		1	2	3	4	5
Design and Social Inquiry	395	1.6583				
Arts & Letters	526	1.6974				
Education	560	1.7776	1.7776			
Nursing	269	1.8000	1.8000	1.8000		
Business	944		1.8702	1.8702		
Engineering	511			1.9366		
Science	284			1.9369		
<i>p</i>		.079 <sup>a</sup>	.565 <sup>b</sup>	.103 <sup>c</sup>		

*Note.* Test to determine if two or more groups have the same distribution of a single categorical variable.

<sup>a</sup> Uses Harmonic Mean Sample Size = 424.928.

<sup>b</sup> The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

<sup>c</sup> Alpha = .05.

Another finding that emerged during this study detailed the differences of SPOT mean scores by college (Table 9). During analysis, equal weight to each SPOT mean score was given to ensure that imbalances did not bias them in the data. The lower the score, the higher the student satisfaction. In short, Canvas SPOTs scores showed higher student satisfaction than Blackboard. Based on this revelation, no priori hypothesis of which LMS was superior was assumed. Although this study focuses on online student perception between two different learning management systems at a public university in Florida, research should determine which colleges are different, and possibly why.

**Table 9***Estimated Marginal Means of SPOT*

College & LMS	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
<b>Arts &amp; Letters</b>				
Blackboard	1.904	.069	1.769	2.039
Canvas	1.611	.029	1.604	1.718
<b>Business</b>				
Blackboard	2.006	.045	1.919	2.093
Canvas	1.836	.022	1.792	1.880
<b>Design and Social Inquiry</b>				
Blackboard	1.752	.070	1.615	1.889
Canvas	1.636	.034	1.568	1.703
<b>Education</b>				
Blackboard	1.856	.050	1.758	1.953
Canvas	1.748	.030	1.689	1.808
<b>Engineering</b>				
Blackboard	1.993	.056	1.882	2.104
Canvas	1.920	.031	1.859	1.980
<b>Nursing</b>				
Blackboard	1.915	.069	1.779	2.051
Canvas	1.753	.044	1.666	1.840
<b>Science</b>				
Blackboard	2.048	.094	1.864	2.231
Canvas	1.917	.040	1.840	1.995

**Chapter Summary**

This chapter presented a full description of the study design, the rationale for the research method selections, and their respective instrumentation. The chapter also addressed the ways in which data were analyzed regarding reliability and validity.

Chapter 5 will present the research findings, implications, conclusions, and recommendations.



## CHAPTER V. DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

Students' perception of the quality of online instruction based on the framework (i.e., LMS) that handles all aspects of the online learning process was examined within this study. The results of analyses of significant differences in online student perception between two different learning management systems will be discussed within this chapter. Moreover, this chapter provides the implications and recommendations for future study.

Based on mean score responses recorded within the *Instructor Evaluation Form* (i.e., SPOT), the research question for this study sought to discover if significant differences existed in student perception between two different learning management systems: Blackboard and Canvas. Before performing an ANOVA, homogeneity of variances was assessed by Levene's t-test. The assumption was verified as the effect size results reveal how much LMS had affected the mean score. Even though sample sizes for this study were unequal, standard deviations were similar among all groups. ANOVA yielded  $p < 0.05$  indicating the test hypothesis is false and should be rejected. As a result, a significant difference was found in student perception between two online learning management systems under review in this study.

### **Discussions**

This quantitative study made a conjecture about online student perception between two different learning management systems among variables based on past research and literature. In this study, moderating variables could have changed the

strength and direction of an effect. It was a strong assumption by this researcher that variables would influence significant differences in online student perception between two different LMSs.

This study reviewed student perception of online instruction taken from the *instructor evaluation form*. Evaluation is not a *silver bullet* that will automatically improve teacher effectiveness and student outcomes (Putnam et al., 2018). From a superficial standpoint, few assessment methods can match the student evaluations (Kidd & Latif, 2004). This fact is likely the reason that most public and private higher education institutions use student evaluations. Student evaluations help determine what works well and what could be improved within a program or initiative. Results are a vital component for institutions today as results can reveal how well an institution is meeting its goals.

However, caution must be given before reaching conclusions within any study using student evaluations as a reliable instrument. Moreover, this research assumed that the question used to rate the instructor's *overall teaching effectiveness* within the *instructor evaluation form* could be used to measure the effectiveness of a learning management system. To reduce any sampling bias, other questions within the *instructor evaluation form* were discarded as they were limited in scope for this study's research question.

Kizilcec et al. (2017) underscores the need to first offer sufficient guidance and support to LMS users, both teachers and learners. Providing exclusive guidance and support may prove to be highly challenging as the number of LMS users continues to increase (Araka et al., 2020). Instructor variables such as, but not limited to, faculty training, development, and support, will also impact how colleges can influence students'

perceptions of an LMS. These are but a few variables that will be discussed within this study's recommendations for future research.

Most higher education institutions already have a dedicated LMS in place to serve online education. Although this study finds a significant difference between the two LMSs under *review*, there are too many LMSs to make that assumption which LMS is best. But for the top two in market share, it is worth noting. Because institutions do not frequently change LMSs, further research to compare many LMS between courses, colleges, and other universities is not viable.

### **Conclusions**

It must be noted that this study began before the Pandemic of 2020 and concluded approximately one year into this disruption in education. With minimum research in the field of learning management systems, specifically on the valuation of student perception on these frameworks, this study makes an important contribution to current and future research at public institutions.

### **Recommendations for Future Research**

The results of this study generated a plethora of additional questions for future research. Although this study evaluated the differences in online student perception between two LMSs, further research is needed to identify other factors that may influence the results of this study. This research requires future examination on the following:

- nonresponse bias
- using grades to determine instructor effectiveness
- the rapid development of network and information technology
- the quality of the faculty training

- the quality of the LMS mobile apps
- access, equality, and equity within online courses
- instructional design of the course
- next-generation LMS
- dedicated metric to measure LMS user satisfaction; and
- the pandemic of 2020.

### **Nonresponse bias**

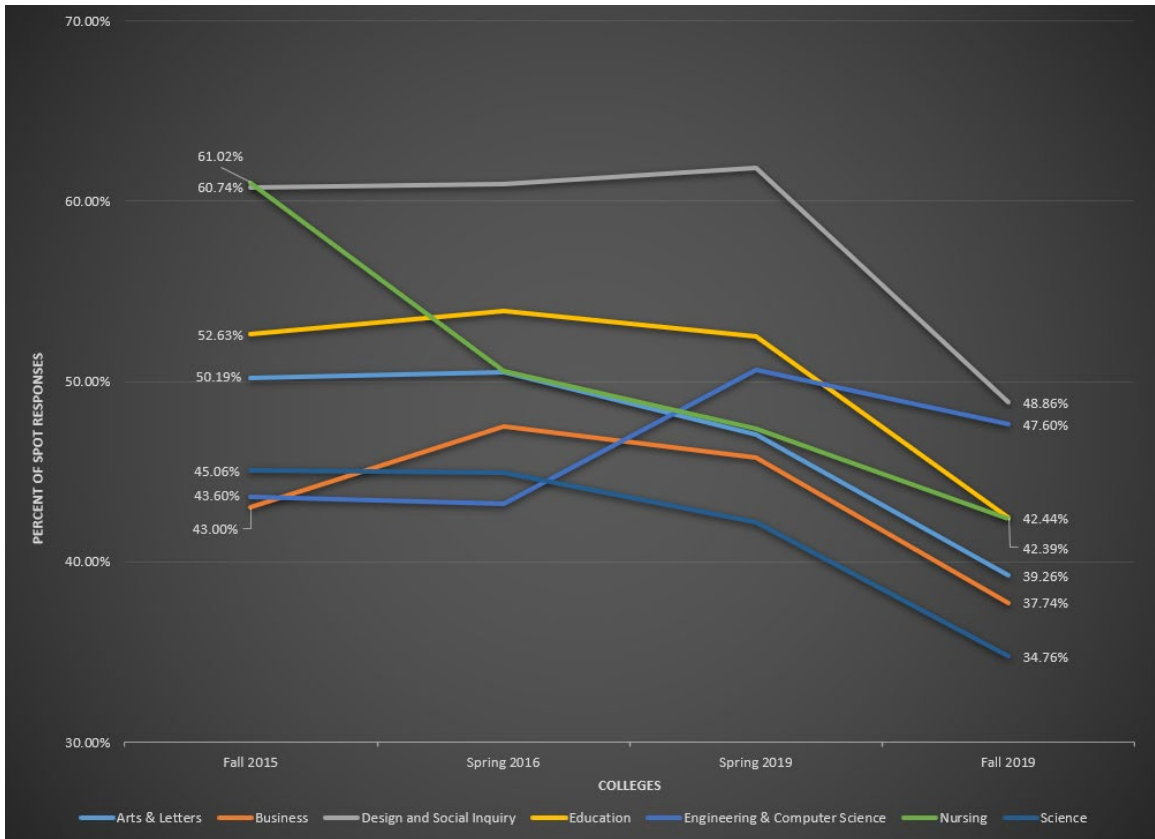
Many higher education institutions use student evaluation scores as a measure of classroom success for several reasons. Student evaluations of teaching scores are a low-cost method to capture instructor performance (Estelami, 2015). Student evaluations provide more significant insights than other assessment methods that have been developed (Nevo et al., 2010). While response rates to surveys are rarely perfect (100% participation), many researchers have observed that response rates are lower when administered in an online format (Avery et al., 2006). Though the literature on response rates, nonresponse bias, and response bias among online and paper surveys is not extensive, several studies in this burgeoning area of research merit discussion (Sax et al., 2008).

A concerning trend is revealed when analyzing data provided in Table 2 (Percent of Online Course SPOT Respondents by College, Term, and LMS). Converting the data to visualization (Figure 4) shows lower response rates over subsequent terms scrutinized within this study. Further analysis reveals that six out of seven college SPOT response rates dropped an average of 11.02%. What has occurred between the migration of LMSs to result in lower response rates? Potential respondents are likely to weigh attributes such

as topic interest, community involvement, the reputation of the institution requesting the survey response, the completion incentive offered, and the cost of time and effort in completing the survey (Bacon et al., 2016).

**Figure 4**

*SPOT Response Rates by College*



Lower response rates raise concerns about the representativeness of SPOTS.

Nonresponse bias is defined as "...the bias that exists when respondents to a survey are different from those who did not respond in terms of demographic or attitudinal variables" (Sax, et al., 2003, p. 441), becomes a troubling issue. As response rates vary across colleges, further research of the potential for nonresponse bias should be explored, especially as the response rates dropped from the migration from one LMS to another.

There exists the possibility for a qualitative study to address this issue.

### **Using grades to determine instructor effectiveness**

Due to the limitations of this study, and the anonymity of SPOT results, further research could be conducted on whether final grades correlate to the effectiveness of an LMS. However, as SPOTS are anonymous, grades cannot be discerned by student evaluation of instructor effectiveness or LMS effectiveness. Grades do not necessarily mean that online students have learned from the instructor, the content, or the course framework. Existing literature has tended to measure online learning success either by comparing it against learning success in traditional contexts or by examining students' perceptions, behaviors, or learning outcomes (Young, 2006).

Further complicating this analysis would be to determine if final grades were based on instructor effectiveness or the efficacy of the LMS? At the end of an academic term, students fill out course evaluations, and faculty assign grades. The proximity of these events makes it natural to wonder whether they are linked (Love & Kotchen, 2010). Love and Kotchen (2010) reported that increased institutional emphasis on teaching evaluations could exacerbate the problems of grade inflation and inadvertently lower faculty teaching effort.

### **Rapid development of network and information technology**

In the emerging e-learning revolution, the success of quality education depends on the proper use of information and communication technology (Kadosh & Dowker, 2015). With the rapid development of network and information technology, the traditional mode of education has been severely affected by the wave of information technology, *education informatization construction* of the combination of information technology and

education has become the reform and development of the organic component and the driving force (Jianhong & Furong, 2020). Although this study focuses on comparisons of two LMSs, technology will forever change the roles of teachers and learners.

### **Faculty training**

Most higher education institutions already have in place an LMS. The shift to online delivery of materials without appropriate faculty training could lead to disastrous results for student achievement. As with most technology, acceptance is based on the end user's experience and their determination of usefulness (Bove & Conklin, 2020). Student achievement suffers when teachers are unfamiliar with and lack experience teaching in their assigned learning environment (Rivkin et al., 2005).

Salisbury (2018) found that instructors felt limited by LMS capabilities. LMSs do not contribute significantly to successful teaching and learning if instructors are not well prepared to use it, recommending additional instructor preparation for using LMSs and teaching online. As this study does measure significance between two LMSs, faculty readiness and training were not factored in.

In a recent study (Sun & de la Rosa, 2015), 195 online students were surveyed to evaluate if training for online faculty affected and/or influenced student perception of their online instructors. Based on a 62.56% student response rate, 72 students completed online courses by faculty who received online training, while 50 students completed online courses by faculty who did not receive online training. The results of the study verified that "the effects of faculty training on learning objectives, outcome assessments, and instructional materials are marginally significant" (Sun & de la Rosa, 2015, p. 56). These results cannot determine if the faculty training was of the highest quality. Noval

and Johnson (2018) state not all faculty are given formal training on the usage of a new LMS, which may affect the outlook of faculty regarding LMSs.

### **LMS mobile apps**

This study fails to address M-learning (i.e., mobile learning). Advancements in the fields of computers, mobiles and information technology have revolutionized the education sector to a great extent, with mobile learning gaining immense popularity. In recent years, mobile technologies have made major progress in its development and have become an integral part of our daily lives (Blilat & Ibriz, 2020). Mobile learning lets students benefit from interacting with their course content on the devices they use to connect with every other aspect of their lives, nearly 24/7 (Bernier, 2019). Because both Blackboard and Canvas utilize mobile apps, further research should focus on how the use of smartphones and other technological devices as learning resources affect student satisfaction with an LMS.

### **Access, equality, and equity within online courses**

For all students to succeed academically, all students must be welcomed to learn. All learning environments must be accessible, welcoming, and inclusive to all diverse learners. Especially when that environment is a *virtual one*.

This study's results on LMS comparison offer a cautionary note about instructional quality and access, equality, and equity. Higher education researchers describe access as equal opportunity to participate in higher education (Clancy & Goastellec, 2007). However, in practice, access to equal opportunities does not ensure equal outcomes because of structural inequalities that privilege the already advantaged (Peurach et al., 2019).



This study and its findings do not generalize online frameworks. While this study does include survey responses from online participants, quantitative data only describes the online courses from the perspective of instructor effectiveness.

In future research, a qualitative approach should ensue to collect survey and interview data from a broader range of online participants, such as, but not limited to, students who dropped out of online courses. A better understanding of why these students dropped out of the courses would help course designers develop customized supports to support more types of students to persist through the online courses (Littenberg-Tobias & Reich, 2020). The findings of this study illustrate the limits and affordances of educational technologies in advancing access, equality, and equity in higher education.

### **Instructional design of the course**

Although the LMS houses the course content for online instruction, this study fails to address how the course content was structured. Few studies have looked into the relations between online courses' design elements and their learning outcomes (e.g., Jaggars & Xu, 2016); In a summary of their report's findings, Arabasz and Baker (2003) identified significant concerns of online teachers related to distance education. A major concern cited was faculty's lack of knowledge to design courses with technology. And as online teachers, faculty do not possess the necessary skills in instructional design and are increasingly being encouraged to develop online courses. If the courses under review are not designed using the full set of quality instructional tools, the courses may be doomed before the course begins.

Information Resources Management Association (2011) states that instructional design is the process of planning for the development and delivery of effective education

and training materials. Price (2016) states an assumption that course design is the most critical component impacting both student learning and faculty teaching. Instructional design affects student learning, instructor satisfaction, and the transactional difference between the students and instructor. The results of this research can lead to bias due to not knowing if faculty had knowledge of, or received, the support of instructional design to build their courses, regardless of the LMS used. Another promising avenue for future research would be a close qualitative examination of course-design elements, e.g., via interviews with the instructors and/or course designers, to triangulate how course elements were designed and how they might be modified to enhance students' learning outcomes (Zheng et al., 2020).

### **Next-Generation LMS**

How are students coping with the disruption of technology occurring within higher education online learning? LMS often leads to minimal student-teacher interaction, loss of specificity, difficulty in adapting for teachers or curriculum, manipulation of the curriculum to meet student needs, etc. The LMS struggles to deliver on the modern workplace's needs because it was designed in a different era (Betts, 2020).

*A learning experience platform (LXP)* is a software service capable of curating quality learning resources for self-improvement, personalized to users' most immediate needs (Betts, 2020). Although both LMS and LXP platforms have similar objectives, both have two distinct differences. Whereas an LMS relies heavily on the administrator to manage learning, the LXP provides learners with the total freedom to explore learning materials and discover the content appropriate for their learning level. In other words,

LXPs are *collaborative platforms* that place learning under the control of the user rather than the administrator.

According to Bouchrika (2020), LXPs are increasingly becoming popular, and more organizations are gradually transitioning from the usage of LMS programs to LXPs. Bouchrika (2020) states that in the next three years, the LXP market is poised to grow at \$15.7 billion. A holistic and ecological learning approach should be implemented to enhance learning systems and ensure these systems can adapt to upcoming advancements in education and technology (Redmond & Macfadyen, 2020). Radical transformation within the education sector will provide many opportunities to analyze and scrutinize the evolution of LMSs.

### **Pandemic of 2020**

Typically, a transition from one LMS to another presents a massive challenge for the staff, faculty, and students. An enormous disruption to transition from traditional classroom instruction to distance learning would adversely affect faculty and student perceptions of an LMS. Such a disruptive occurrence occurred in the year 2020 during the COVID-19 pandemic. COVID-19 has brought many challenges to schools and families (Esposito & Agoratus, 2021). The first wave and the still-lasting COVID-19 pandemic brought the need for a new mindset, both from educators-teachers and students around the world (Geczy & Sujbert, 2020).

The topic of COVID-19 affected most relatable academic fields recently, ranging from basic research to applied studies and even education (Geczy & Sujbert, 2020). It is very important to note that this study began before the Pandemic of 2020, and no data during this disruption was earmarked, gathered, or analyzed.

Consequently, it is the assumption of this researcher that many studies will be forthcoming documenting how the rapid deployment and catalyst for digitalized education has affected education for years to come—both positively and negatively. As e-learning and technologies advance significantly, practitioners and academics must find new ways to make the most of this rapid development (Chang & Guetl, 2007). As previously stated, most higher education institutions already have an LMS; the swift shift to online delivery of materials without appropriate faculty training could lead to disastrous results for student achievement.

### **Conclusion**

The purpose of this study was to discover if significant differences existed in student perception between two different learning management systems. The researcher believes that this study and more importantly, the further research suggested following this study, in the context of whether institutions decide to continue within existing LMS frameworks or transition to a new one, will be pertinent to understanding the repercussions on student achievement and student and instructor satisfaction.

This study's survey instrument contains a measurement for student perception of whether the online course instruction was effective. How the learner determines "effectiveness" needs to be evaluated as well. User stories are used to paint a clear picture of the actual use cases of a product or service for each target audience (Clossen & Klimczyk, 2018). The student's successful transition in the course may be quite different from the student's view of the instructor's delivery and/or teaching effectiveness related to the material or the effectiveness of the LMS. The determination of the effectiveness of faculty members within a course is a required component for the faculty evaluation processes.

This research assumed that the question to ‘*rate your instructor's overall teaching effectiveness in this course*’ within the instructor evaluation form can be used to measure the effectiveness of a learning management system. This researcher discovered during the literature review that "no instructor evaluation forms addressed student's appraisal of the LMS".

Gathering student feedback on teaching practice is commonly used in educational settings as an improvement tool and performance measure (Mandouit, 2018). Walek et al. (2013) suggests it is essential to define appropriate criteria for evaluating the course of the distance learning system. Based on the results of this study, the use of students' evaluations for assessing LMSs may not be appropriate, but future studies should address the concerns noted. On no account should this study's results imply that course evaluations be ignored. But this study's results should be scrutinized. It is time to understand the types and volume of information being gathered and become knowledgeable and active in determining implications of its use in decision making at course, program, institution, national, and international levels (Duin & Tham, 2020). More importantly, this research understates the importance of a dedicated metric to be used to measure *LMS user satisfaction*. This metric would be useful in determining whether an LMS had a significant relationship with learning effectiveness.

Because the pandemic led to a seismic shift to the online delivery of course content across the world, it is the belief of this researcher that contingency plans will now be commonplace within higher education to ensure a seamless delivery of all face-to-face courses online if needed. This study can assist higher education administration in deciding to continue or transfer to another LMS, or even search for new ones. Moreover,

and most importantly, during the process of this study and its conclusions, this study found a plethora of further research questions to stimulate further research in online education.

## APPENDICES

## APPENDIX A. IRB Approval Letter



### **Institutional Review Board**

Division of Research  
777 Glades Rd.  
Boca Raton, FL 33431  
Tel: 561.297.1383

[fau.edu/research/researchint](http://fau.edu/research/researchint)

Charles Dukes, Ed.D., Ph.D., Chair

DATE: June 24, 2021

TO: Todd Price  
FROM: Florida Atlantic University Social, Behavioral and Educational Research IRB

IRBNET ID #: 1776787-1  
PROTOCOL TITLE: [1776787-1] Title of Study: STUDENT PERCEPTION OF ONLINE LEARNING MANAGEMENT SYSTEMS AT A FLORIDA PUBLIC UNIVERSITY

SUBMISSION TYPE: Other

ACTION: DETERMINATION OF NOT RESEARCH  
EFFECTIVE DATE: June 24, 2021

Thank you for your submission of Other materials for this research study. The Florida Atlantic University Social, Behavioral and Educational Research IRB has determined this project does not meet the definition of human subjects research according to federal regulations. Therefore, it is not under the purview of the IRB. You may proceed with the project activities as outlined.

We will keep a copy of this correspondence on file in our office.

If you have any questions or comments about this correspondence, please contact Donna Simonovitch at:

Institutional Review Board  
Research Integrity/Division of Research  
Florida Atlantic University  
Boca Raton, FL 33431  
Phone: 561.297.1383  
[researchintegrity@fau.edu](mailto:researchintegrity@fau.edu)

\* Please include your protocol number and title in all correspondence with this office.

**This letter has been electronically signed in accordance with all applicable regulations,  
and a copy is retained within our records.**



APPENDIX B. SPOT Results Fall 2015 & Future Terms

**FLORIDA ATLANTIC UNIVERSITY  
STUDENT PERCEPTION OF TEACHING SEARCH**

Term:		Campus		Enrolled:	
Course		College		Responses:	
Instructor:		Title:		Percent:	

	Completely Agree	Somewhat Agree	Somewhat Disagree	Completely Disagree	No Response	Mean	
1. Covered what was stated in the course objectives.							
2. Communicated ideas effectively							
3. Gave useful feedback on coursework							
4. Encouraged students to think critically							
5. Showed respect for students							
	Excellent	Very Good	Good	Fair	Poor	No response	Mean
6. Rate your instructor's overall teaching effectiveness in this course:							

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