DETERMINATION OF SELECTED COURSE MANAGEMENT SYSTEMS
ADVANTAGES AND CHALLENGES: A CASE STUDY

A Thesis
Presented to
The Faculty of the College of Science and Technology
Morehead State University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Dolruedee Suppacheewa
April 2011
Accepted by the faculty of the College of Science and Technology, Morehead State University, in partial fulfillment of the requirements for the Master of Science degree.

Ahmad Zargari  
Director of Thesis

Master's Committee:  
Ahmad Zargari, Chair

May 12, 2011
Date
Online student enrollment is growing continuously and technologies are evolving rapidly, as a result of these changes Course Management Systems (CMSs) are dramatically developing and advancing to stay competitive. Course Management System is one of the instructional tools that online faculty commonly use to deliver their teaching instruction, that students use to demonstrate their learning progress, and that institutional administrators and personnel use to manage and their database systems and reports. Course Management System is an essential tool that enables the online teaching and learning systematically. Many institutions have been faced with making some considerations regarding CMS use and an adaptation of one of the Course Management Systems. Importantly, one of the main factors that many institutions use in helping to make a decision is results from a comparison study of advantages and challenges of the Course Management Systems to determine the system that best fits their institutions. The problem studied in this thesis was to address the lack of the application of formal research methods to report on the functionality and other user-related attributes of Blackboard version 7.3 and Moodle version 1.9 with support of Moodlerooms. While there are various existing Blackboard versus Moodle Course Management Systems comparison studies internationally, they do not specifically reflect the capabilities, needs, and unique
culture of Morehead State University and the educational system of the Commonwealth of Kentucky. The purpose of this study is to determine the advantages and challenges of selected Course Management Systems, Blackboard version 7.3 and Moodle version 1.9 with support of MoodleRooms, based on MSU students' and faculty's perspectives and experiences. Surveys and interviews were the main methodology to collect data from online faculty, online graduate and undergraduate students, and the Coordinator of Instructional Design. The findings showed eighty-nine valid students responses, four valid faculty responses. In this research, the majority of the selected participating students and the final four-participating faculty at Morehead State University overall prefer Moodle version 1.9 supported by MoodleRooms over Blackboard version 7.3 (which is not the most recent version of either application). However, further studies are needed to compare the most recent version of Moodle supported by MoodleRooms with the most recent version Blackboard Course Management Systems.

Accepted by:

[Signatures]

Chair
I would like to thank my husband, Daniel Nance, for his unlimited patience, being a brain teasing buddy, support and help, and encouragement through the thesis process and his extra help with our “active” nineteen-month-old son. I also would like to thank you my son, Adrin Amarin Nance, for his cooperation and leaving me alone time to conduct the study and finish the thesis, and my family for their understanding and encouragement. Significantly, I must express great appreciation to my parents, Pol. General Sombat and Jiraporn Suppacheewa, for the love they have given and sacrifices they have made throughout my life to help make this achievement possible.

I also would like to emphasize my deep appreciation and sincere thanks to Dr. Ahmad A. Zargari, my academic advisor and Director of Thesis, for his strong encouragement, guidance, and invaluable advices provided during my entire academic years and thesis process. Furthermore, I would like to thank Dr. Yuqiu You and Dr. Clifford S. Hunt, Thesis Committee members for their point of view, guidance, and support.

Additionally, I would like to thank Ms. Misty Hanks, Coordinator of Instructional Design, for providing some general background information for this study and Dr. Samuel S. Faulkner, Chair of Institutional Review Board for the Protection of Human Subjects in Research, for his guidance through the IRB Approval process.
# TABLE OF CONTENTS

## Chapter I
- Introduction .......................................................... 1
- Statement of the Problem ........................................ 4
- Purpose of the Study ............................................. 5
- Significance of Study .............................................. 6
- Assumptions .......................................................... 6
- Limitations ............................................................. 7
- Organization of the Study ....................................... 9
- Definition of Terms ................................................ 9

## Chapter II: Review of Literature
- Background .......................................................... 12
- A Brief Historical Review ........................................ 35

## Chapter III
- Methodology ......................................................... 50
- Design ................................................................. 55
- Instrumentation ..................................................... 56
- Population ............................................................ 57
- Data Collection Methods ........................................ 58
- Data Analysis ....................................................... 59
- Findings ............................................................... 61
- DISCUSSION OF RESEARCH QUESTION ONE: ...... 64
- DISCUSSIONS OF RESEARCH QUESTION TWO: .... 69
- DISCUSSIONS OF RESEARCH QUESTION THREE: .. 73
- DISCUSSIONS OF RESEARCH QUESTION FOUR: ... 80

## Chapter V: Conclusions and Implications
- Conclusions ......................................................... 94
Research Question One ....................................................................................... 96
Research Question Two ....................................................................................... 96
Research Question Three ..................................................................................... 98
Research Question Four ....................................................................................... 99
In Summary ........................................................................................................... 101
Future Research and Recommendations ............................................................... 101
References ................................................................................................................. 102
Appendix A: Students and Faculty Surveys.............................................................. 106
Appendix B: Tables .................................................................................................. 117
Appendix C: Figures ................................................................................................ 120
Appendix D: Letter Requesting Permission ............................................................ 134
Appendix E: Surveys Web Links Emails ................................................................. 138
Appendix F: IRB Application and Related Documents for Approval ....................... 144
Chapter I

Introduction

During the bad economic times and higher fuel costs, it is expected that distance learning students' enrollment growth goes up in post secondary education, especially for online courses and programs (Seaman, 2008).

As the 2010 Sloan Survey of Online Learning, collected from over 2,500 colleges and universities around the United States, showed that during the fall 2009 term there are more than 5.6 million students, nearly thirty percent of higher education students, were taking at least one online course. Compare to the report from the year earlier, this an increase of nearly one million students (Seaman, 2010). It also showed that the online enrollments have been substantially growing by more than 21%, which far exceeds the 2% growth in the total higher education student population from the previous year (Seaman, 2010).

Because of the nature of online teaching and learning that the course contents are delivered via the Internet, numbers of Course Management System (CMS), an Internet-based software application that can be used for managing and distributing online resources and Web-based courses (Simonson, 2008), were developed. Feeney stated (2001) that “Course management systems have been the focus of recent scholarly attention” (Feeney, 2001). The web-based Course Management System, hence, is created to be simple to operate by the faculty and students and focuses on content and learner management functionality. Likewise, the uses of these features by instructors must enhance the assessment of instruction experienced by the students and must be accommodating with comprehensive online learning products. It was stated that “CMS as a pedagogy transformation tool to one of unburdening the faculty of administrative tasks...most Course Management Systems (CMSs) date from the
mid-to-late-1990s” (Roach, 2003). Since then, there are various CMSs available, developed, and being used for educational institutions. CMS plays an essential role as an educational delivery method, especially, for online education. In his study, Roach (2003) stated that for many online faculty, CMS is one of the primary reasons that they decided to use technology and get enthusiastic about using it (Roach, 2003). As Raaij and Schepers (2006) stated “The globalization of education goes hand in hand with an increase in distance learning programs, supported by a rising utilization of internet-based electronic learning (e-learning) systems [CMSs].” They believed that the online learning systems, in this study it is called Course Management Systems (CMSs), “help educational programs cross borders of time and space” (Erik M. van Raaij, 2006).

Morehead State University (MSU), in addition to traditional face-to-face courses, has been offering distance learning courses. Like many institutions, MSU 2010 reported data showed distance learning student enrollments are growing. In fall 2009 term, there were 480 distance learning courses being offered throughout the region, sixty percent was via the internet and forty percent was via the interactive compressed video. The Morehead State University: Profile 2009 – 2010 report showed, “distance learning courses accounted for about nineteen percent of course enrollments (6,973 of 37,730) and twenty-one percent of student credit hours generated (20,753 of 99,917) overall.” It was reported that the University offered 288 online courses with 5,633 student enrollments and 16,343 credit hours (Assessment, 2010).

At Morehead State University (MSU), Blackboard has been a primary CMS used as a tool for delivering distance learning courses, especially for the online courses. Gary Holeman, assistant vice president for technology, stated (2011) that “the version of Blackboard currently used by the university will no longer be supported by October 2011.” Therefore, Morehead State University (MSU) is
currently re-evaluating its use of Blackboard (7.3), commercial Course Management System. And among available CMSs, Moodle, an open source Course Management System, is selected in which the university is considering switching to it (Todd, 2011) in the form of Moodlerooms (a Moodle web hosting and support service company, as a vendor, providing a Moodle-core application). The reconsideration of current CMS is in responding to the teaching and learning needs, university’s resources, and management success at Morehead State University.

Todd (2011) reported that Dr. Patrick stated “Blackboard costs the university approximately $240,000 per year in licensing, hosting, and other fees. Moodle, which is an open-source program and has no licensing fee, would cost the university approximately $120,000 for hosting and other fees” (Todd, 2011).

Online student enrollments are rapidly growing and Course Management Systems (CMS) are constantly evolving, although there are factors that need to be considered for selecting a Course Management System. The objectives of this study are to determine advantages and challenges between Blackboard (7.3) and Moodle (1.9) supported by Moodlerooms used at MSU, to survey MSU users of Blackboard and Moodle supported by Moodlerooms to obtain their perspectives and experiences, to address students and faculty comments of advantages and challenges and overall evaluation and satisfactions on the selected CMSs, and to provide a study and its findings that will assist other institutions considering adopting, staying with, upgrading to, or migrating to a CMS such as Blackboard or Moodle supported by Moodlerooms. The researcher expects this study will provide the findings that can be used to support further MSU CMS evaluation, implementation, and development and used for developing a further study at other institutions.
Statement of the Problem

As technologies are dramatically developing and rapidly changing, so does Course Management Systems (CMSs). They keep evolving their product’s features to stay competitive although some have consolidated. This can cause a change and/or a need to change to the chosen CMS at many institutions. At times, some institutions switched over from one to another system based upon potential advantages and existing challenges they were experiencing. Some are considering migrating to different CMS not necessarily because of the existing and potential challenges or their experiences, but simply because the other CMS seems to have more potential advantages or less challenges or because of forced migration or an upgrade by its current system. Some decided to stay with their current system and keep upgrading to the newer version because of a received deep discount as a part of a consortium, predicted interruptions for the users, migration costs, and troubles that students, faculty, support personnel have to go through may be “little too much”, et cetera. Regardless which direction each institution is going or leading toward or the reasons of their decisions, any CMS that is adopted will have its advantages and challenges and they may be varied based upon each institution’s settings, needs, and goals.

The problem studied in this thesis is to address the lack of the application of formal research methods to report on the functionality and other user-related attributes of Blackboard version 7.3 and Moodle version 1.9 with support of Moodlerooms. While there are various existing Blackboard versus Moodle Course Management Systems comparison studies internationally, they do not specifically reflect the capabilities, needs, and unique culture of Morehead State University and the educational system of the Commonwealth of Kentucky.

The null hypothesis (H₀) is that there is no significant difference of advantages and challenges between Blackboard version 7.3 and Moodle (1.9) supported by
Moodlerooms course management systems based on participating students' overall perceptions as used at Morehead State University on Spring 2011.

The alternate hypothesis (Hₐ) is that there is a statistical difference in advantages and challenges for Blackboard version 7.3 and Moodle (1.9) supported by Moodlerooms Course Management Systems based on participating students' overall perceptions as used at Morehead State University in Spring 2011.

**Purpose of the Study**

The purpose of the study is to survey MSU students and a selected group of faculty about their perceptions and overall experiences of currently used CMSs, to determine the advantages and challenges of selected Course Management Systems, such as Blackboard (7.3) and Moodle (1.9) supported by Moodlerooms during the Spring semester 2011, and to provide the study findings. A qualitative interview with instructional staff, two quantitative surveys of four online faculty, and a quantitative survey of online students’ evaluation of the selected Course Management Systems, Blackboard (7.3) and Moodle (1.9) supported by Moodlerooms, are the methods used to conduct the research.

To conduct this research, the following four research questions were identified:

1. What are online student’s overall evaluation and satisfaction of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?
2. What are online faculty’s overall evaluation and preferences of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?
3. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems
based on survey results of online students at Morehead State University in Spring 2011 semester?

4. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online faculty at Morehead State University in Spring 2011 semester?

**Significance of Study**

The findings of the study may be used to advance the body of knowledge relating to selected Course Management Systems. The administrative personnel could use the findings to better understand the online faculty and student’s evaluation on selected systems. From the collected data, it will reflect the faculty and students’ evaluation that can be used as a part of the determination process of the selected systems and/or to support the implementation and support process of the selected system.

**Assumptions**

For this study, the research would have to be based on a few assumptions. The following assumptions are made about this research and the circumstances in which it was conducted:

1. The data and information that are obtained from the MSU personnel, such as the Office of Institutional Research and Analysis, Office of Distance Learning, and Office of the Registrar, are unbiased and accurate.
2. The participants in the study volunteer, understand the surveyed questions and answers, and follow instructions to complete the survey.
3. Online faculty and students have sufficient technological skills.
4. Online faculty and students have sufficient technical support.
5. Online faculty and students have sufficient technological infrastructure (e.g. high quality-of-service access to the internet).
6. The participants in the study voluntarily took the survey and provided the most accurate answers based on their understanding of the questions and their evaluation toward the selected Course Management Systems.
7. Blackboard, online Course Management System, is a most common CMS product among others to be used.
8. Course Management System provides numbers of advantages and challenges to online students and faculty.
9. Advantages and challenges of the Course Management Systems can be different based on each participant's experiences, technology skills, and learning/teaching styles.
10. Some participants may or may not have prior experiences of using a Course Management System prior to the Spring 2011 semester.
11. Some participants may have prior experiences with Blackboard but not Moodle supported by Moodlerooms prior to the Spring 2011 semester.
12. The treatment of both groups (faculty and students) was comparable in regards to methodology of the study.
13. Course Management Systems enhance data management and online teaching and learning environment.
14. The study will support administrative personnel in determining which web-based Course Management System to be utilized for online education.

Limitations

This study had some limitations. Sample of online classes and scale: this study is limited to a sample of online classes using Moodle supported by Moodlerooms from Morehead State University; it is only one participating institution
of respondents. To study students from multiple schools such as University of Kentucky (UK) and others would institutionally broaden the sample. Furthermore, this is a small-scale study which is developed within the limitations of the sample size of online courses that are using Moodle supported by Moodlerooms at Morehead State University. The findings of this particular research will be set in a relatively small sample of students and a selected group of faculty but its analyses will be based on the results obtained.

Unknown bias evaluation: some participant's prior experiences with CMS, technical, and technology skills, Moodle supported by Moodlerooms is first-time deployed at Morehead State University for a pilot project; participants may have to overcome some learning curves in order to be familiar with Moodle supported by Moodlerooms. This may create unknown biasing of the surveyed results.

Implementation, access and availability: it is limited to the time frame of Spring 2011 semester at Morehead State University. The participants have less than an academic semester to be familiar with the selected CMS, Moodle supported by Moodlerooms, before providing the surveyed data. After the university makes the selection decision, the other system will be no longer accessible by May 1, 2011. This may cause unknown biasing of the surveyed results.

Data collection: the researcher is limited to only one semester of data collection. The Spring 2011 semester is the last semester that the faculty and students at Morehead State University could have access to both course management systems, Blackboard and Moodle supported by Moodlerooms. Also, this is the last semester that the university is implementing and supporting both systems.

Faculty and students response group: it was limited to only four participating volunteer faculty and the volunteer students who were registered in an online course wherein the faculty member was using current Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms and was not a random sample of the
Morehead State University faculty and students. This could be bias based on their perceptions.

**Organization of the Study**

This study is collectively combined with five chapters and structured as follows. Chapter One introduces distance learning and Course Management Systems and addresses purpose of the study, research questions, significance of the study, assumptions, limitations, and definition of terms. Chapter Two discusses the literature considered appropriate to this study. Chapter Three presents the methodology. The methodology of this study includes sampling techniques, collection, and analysis procedures. Chapter Four provides the findings of the study. Chapter Five concludes the findings of the study with implications for further practices and studies.

**Definition of Terms**

**Blackboard (Bb):** Blackboard is an integrated set of web-based tools for course management and delivery, a Course Management System. (Studies, 2011)

**Course:** A course is a component of education encompassing teaching, learning and assessment.

**Course Management System (CMS):** A software system specially designed and marketed for faculty and students to use in teaching and learning (Roach, 2003)

Note: Page 9
Distance Education (DE): Distance Education (DE) is a process to create and provide access to learning when the source of information and the learners are separated by time and distance, or both" (Honeyman, 1993).

Distance Learning (DL): See Distance Education (DE)

E-Learning: See Online Course

Faculty Participant: Instructor currently using Moodle version 1.9 supported by Moodlerooms in Spring 2011, to deliver (all or part) of their online instruction.

Learning Management System (LMS): Learning Management System (LMS) is a software application that automates the administration, tracking, and reporting of training events. (Ellis 2009) Note: Page 1

Moodle: Moodle, Modular Object Oriented Dynamic Learning Environment, is defined as an open source online Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that educators can use to create effective online learning sites (Trust, 2011). Moodle is a product.

Moodlerooms: Moodlerooms is an official Moodle partner company, as a vendor, from which Morehead State University purchased the product and support services. Moodlerooms is to provide an open, accessible and flexible learning management platform with open-source Moodle at its core (Moodlerooms, 2011).

Non-Traditional students: Also called "adult student", "adult learner", "re-entry student", or "returning student." According to the National Center for Education Statistics (NCES), a non-traditional student has one or more of the following characteristics: delays enrollment (does not entering postsecondary education right after high school); attends part time; works full time (35 hours a week or more); is financially independent for purposes of determining eligibility for financial aid; has
dependents other than a spouse (usually children, but sometimes others); is a single parent; or does not have a high school diploma (has completed high school with a GED or other nontraditional diploma or has not finished high school) (Simonson, 2008).

**Online Course:** Online course is an educational course in which instruction is completely delivered via Internet using Course Management System to any enrolled students.

**Research:** Research "designates an activity designed to test a hypothesis, permit conclusions to be drawn, and thereby to develop or contribute to generalizable knowledge" (Department of Health, 1979).

**Student Participant:** This group of respondents includes a volunteer group of students who were also registered in an online course wherein the faculty member was using the current Blackboard version 7.3 and Moodle version 1.9 supported by MoodleRooms.

**Survey:** Survey is a method of collecting data, which is used to collect in a systematic way, from a sample of individuals.

**Virtual Learning Environment (VLE):** A Virtual Learning Environment is a collection of integrated tools enabling the management of online learning, providing a delivery mechanism, student tracking, assessment and access to resources (JISCinfoNet, 2005).
Chapter II: Review of Literature

Background

Distance Learning (DL) / Distance Education (DE)

Distance Learning (DL) programs were established in the nineteenth century (Peter and Arli, 1997) and the main delivery method is a regular mail (InnovativeLearning, 2011). Instructors teach and somewhere students learn with low face-to-face interaction between students and instructors. The Ministry of Education of New Zealand described that distance education “occurs when students and the instructor are separated by geographic distance or time.”

According to the National Center for Education Statistics (NCES), in the 2000-2001 academic year more than 56 percent of two-year and four-year colleges and universities (post secondary) in the United States offered distance education degree programs with the total of an estimated 3.08 million enrollments (Tiffany Waits, 2003).

From the latest NCES fast facts report, in the 2006–07 academic year, the offered distance education courses and enrollment had increased to 66 percent with the total of an estimated 12.2 million enrollments. Of these enrollments, 77 percent were reported in online courses, 12 percent in hybrid/blended online courses, and 10 percent in other types of distance education courses (Statistics, 2008).

Distance learning is a formal education process in which instruction may be asynchronous or synchronous. Thus, Distance Learning adds accessibility and flexibility, regardless of barriers of time, pace, or place. It uses all types of instructional technologies from print to computer-based. Students can be at satellite campuses, at the workplace, at another country, or at home. Interactivity between
students and instructors and among themselves can be applied into the course (Pamela, 2002). The host of technological inventions made distance education possible.

Redfern and Naughton (2002) have documented that, “The traditional one-way model of DE course delivery fails primarily because of the lack of support for social interaction. When interaction between student and instructor is constrained, questions can remain unanswered, information can be misinterpreted and never corrected, and instructors fail to gauge reaction to their courses. Another critical issue is the lack of interaction between students themselves; not being a part of campus population of students limits the provision of a socially supportive framework within which effective learning can take place.”

**Online Learning / Online Education**

Web-based or online learning is a form of distance education and a portion of a modern educational refinement with its own distinct characteristics that offers a critical educational alternative. Several years ago, online learning was a very advanced technological strategy and not a preference for most distance instructors and students because of a fear of the technology, poor or limited Internet coverage, and lesson delivery. Instructors and students at the time preferred to deal with the low technology, manual operation, and straightforward course rather than high technology online learning, which required a few basic skills.

However, with the increasing of distance students’ learning population and the use of technologies in the current decade, as well as the flexibility, convenience, and usefulness of online learning, and decreasing of technological fears, there are a number of course offerings in the web-based environment throughout the world. The courses have been established through diverse colleges, universities and training facilities for those students (Bob, 1999).
According to the results of the 2007 Annual Survey by Instructional Technology Council (ITC), the collected data shows student demand for online education courses continues to grow. Approximately 3.5 million students took at least one online course in the Fall 2006 term, about a 10 percent increase over 2005 numbers (Council, 2008). Thus, online learning emerges in the twenty-first century as a favored educational solution among the distance community’s members.

Technology seems to be less of an obstacle among those students; consequently, web-based teaching and learning has been newly explored and growing rapidly in the educational system. Instructional Technology Council (ITC) (2008) addressed some key trends for post secondary institutions that are offering the distance education by stating that online courses might be the only enrollment growth for some colleges.

An effective online course entails more than just posting the course syllabus and content via the Internet for the students, assuming that the students understand and are working on the assignment, or waiting for their submitted work. As Bob and Ken (1999) described that “Online education is not just an electronic premium where students buy credit, do their work at home, study in isolation, and occasionally communicate with their instructor. It is an inherently relation and human process, not reducible to just sending and receiving electronic massages”. Online learning is a two-way learning enterprise in which students need more communication, feedback and participation (visibility) with their instructors and classmates.

As a conclusion, it is extremely necessary for the instructor to develop or find the appropriate delivery strategies, technologies, and instructional tools to enable online teaching and assist the learning process rather than just adopting an existing model. Machado and Tao (2007) stated that “the days of mimeograph machines and chalkboards has long past.” With all available technologies, educators will have to carefully consider the most appropriate and effective technology tools for their teaching and course delivery. As the nature of online teaching and learning, anywhere – anytime, it is essential to find a computer-based application(s), as called
Course Management System (CMS), Learning Management System (LMS), or Virtual Learning Environment (VLE), which is specifically designed for faculty, students, and administrative personnel that would enable them to teach, learn, and manage online courses effectively.

Course Management System (CMS)

"Most of CMS date from the mid-to-late 1990s" and "roots in colleges and universities." Since then, CMS plays an increasingly critical role in teaching and learning, especially in the online community of higher education (Roach 2003). Sam and Niall (2002) wrote, "The [online] students’ ability to create knowledge can thus be enhanced when their instructors use varied instructional delivery formats and learning techniques to provide a richer environment...It is clear that modern educational practices require significant collaboration and coordination between students."

In responding to the students’ need of social interaction, along with the high potential growth of online learning and teaching, online instructors needs of instructional and course management tools, learners’ needs of education, and the online learning community’s needs of support, the web-based Course Management System (CMS) is generally created and developed. It was stated that designers of web-based Course Management Systems (CMS) realize the importance of correspondence. To enable the social interaction’s capability, a powerful set of instructor and learner tools, advanced integration features, and functions were additionally provided to "(1) Support a multiple user-base and multiple tasks", (2) enhance collaborative learning and teaching in the online environment, and (3) enable the students’ ability to create knowledge (Blackboard, 1999). The instructors can use these instant features for online delivery of their contents, to monitor the class, to enhance the teaching strategies, and to communicate with the students.
A major goal of CMS is “to integrate a suite of teaching technologies into a powerful set of tools that make it easy for faculty to use technology in instruction” (Roach, 2003). In the Roach detailed study, for the evaluation purpose, he (2003) has grouped CMS tools into four functional categories as: content tools, communication tools, gradebook tools, and quiz tools. CMS is believed to be the solution to online teaching and learning needs. It becomes as an essential system and plays a significant role in managing the online teaching and learning environment (Roach, 2003).

There are somewhat varied definitions and names of CMSs that are supporting Roach’s statement as well. For example, CMS was defined as “a suite of software tools, usually organized around a class or unit of instruction. The suite includes most of the tools that faculty members need to teach a class.” Given example tools are to organize and present content, communicate (synchronously and asynchronously), assess student performance, record and report grades, and manage class materials and activities (Roach, 2003).

Ellis (2009) described Learning Management System (LMS) as a “software application that automates the administration, tracking, and reporting of training events.” Machado and Tao (2007) defined it as “a software application designed with the specific intent of assisting instructors in meeting their pedagogical goals of delivering learning content to students” (Michael Machado, 2007).

Kumar, Pakala, Ragade, and Wong (1998) described that the Virtual Learning Environment (VLE) is “an integrated university environment where students can apply for admission over the internet, enroll in the classes offered by VLE after admission, access a complete course, take tests, and interact with the professors as well as classmates” (A. Kumar, 1998). While Raaij and Schepers (2006) described that VLE is “designed for supporting and improving the individual study process… is a web-based communications platform, that allows students, without limitation of time and place, to access different learning tools, such as program information, course content, teacher assistance, discussion boards, document sharing systems, and learning resources” (Erik M. van Raaij, 2006).
Twigg (2003) stated that Course Management Systems can “enhance student performance, reduce drop-withdraw-failure rates, and foster active student participation in course activities” when it is implemented effectively (Twigg, 2003). Payette and Gupta (2009) concluded “the CMS’s make it possible to accomplish goals in education that could never have been possible before.”

In spite of the availability of the “best” CMSs, Raaij and Schepers (2006) believed student’s acceptance is a key component for CMS success. Their study found that the student acceptance and use of the Course Management Systems has significant impact on its success. According to the Acceptance and Use of a Virtual Learning Environment in China (2006), this study showed that student’s perceived usefulness has a direct effect on CMS use. The study suggested that the individual traits between CMS users and their level of technology acceptance and use are among the concerns, besides the CMS design, and they play a crucial role in CMS success (Erik M. van Raaij, 2006).

**Blackboard and Moodle Course Management Systems**

Blackboard is owned by Blackboard Inc., the headquarter is located at Washington D.C., United States of America. It is a globally recognized Course Management System (CMS). It was founded in 1997 by Michael Chasen and Matthew Pittinsky, and a student-faculty team at Cornell University. After acquiring its chief competitor, WebCT, in 2005, Blackboard became the largest Course Management System (Simonson, 2008). In 2009, Blackboard also purchased ANGEL system. The Blackboard Learn 9.1, a “next generation” of learning management system is its latest version. Momani (2010) addressed that Blackboard is currently used not only in higher education and training organizations, but also in military, and various governmental units, such as U.S. Department of Defense. He also stated that because of “Blackboard’s widespread use, pre-packaged course materials are provided by all major education publishers. Furthermore the system
supports external content respecting the SCORM standard” (Momani, 2010). The Beatty and Ulasewicz’s study stated “The Blackboard Learning System™ is a world-class software application for institutions dedicated to teaching and learning. Intuitive and easy-to-use, this product has powerful capabilities in three key areas: Instruction, Communication and Assessment” (Beatty & Ulasewicz, 2006).

Moodle was originally introduced in 2001 and Moodie.com was later launched in 2003. They both are owned by Moodie Trust, the headquarter is located at Perth, Australia. Martin Dougiamas is the founder and the owner of Moodie Trust (Momani, 2010). Moodle Trust (2011) defined Moodle, abbreviation for Modular Object-Oriented Dynamic Learning Environment, as “a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that educators can use to create effective online learning sites” It was also stated that Moodle focuses on “giving educators the best tools to manage and promote learning” (Trust, 2011). Simonson described that Moodle is “an open source software package designed using sound pedagogical principles, to help educators create effective online learning communities” (Simonson, 2008). Momani (2010) stated that Moodle “is evolving towards Instructional Management Systems/ Shareable Content Object Reference Model (IMS/SCORM) standards with platform (Apache, PHP, and MySQL)” (Momani, 2010). In March 2011, Moodle is a leading open source CMS, there are over 1,052,052 registered users, 54,709 registered sites from 213 countries, with 4,359,959 Courses registered using Moodle, and with the most registrations from the United States of America. There are over 279 Moodle developers with write access from communities around the world who are voluntarily working on developing new features, codes, and problem solving. The Moodle 2.0.2 is the latest version that was released on 21st February 2011 (Trust, 2011).

Moodle is a free open-source course management system for anyone to download and install; however, organizations still need some supporting service and resource, such as to host, maintain, support, and customize the Moodle application.
Moodlerooms is an official partner with Moodle and a Moodle-core application. Moodlerooms has been providing Moodle services for many organizations – businesses, industries, and educational institutions. Moodlerooms states its mission has been “to provide an open, accessible and flexible learning management platform with open-source Moodle at its core” (Moodlerooms, 2011).

**Course Management Systems: Advantages and Challenges and Trends and Issues**

In educational settings, especially online learning, the Course Management System (CMS), or called as Virtual Learning Environment (VLE), or Learning Management System (LMS) (Trust, 2011), is being used heavily across the system, educators and students are using and relying on it as a medium to constantly deliver and receive the online teaching and learning contents.

To investigate the CMS’s use in higher education and one of the findings related to the CMS’s administrative capabilities, Roach (2003) conducted the Study Details of How Faculty Use Course Management Systems (CMSs) at the University of Wisconsin Systems “(UWS).” The study findings, expectantly, apply across Course Management Systems in the educational setting. The studied data was methodologies collected by the quantitative survey of 730 faculty and instructional staff CMS users, the qualitative interviews with 140 faculty members and instructional staff, and examination of usage logs within UWS course management system (Roach, 2003).

After the CMS’s use was studied and measured for over five semesters, Roach (2003) indentified some of challenges of CMSs to some UWS faculty and students, which are too time consuming and inflexible for faculty to use, difficult to use for both faculty and students, concerns about product reliability and its supports and changes, unsuited technology or unaccommodating tools to their disciplines such as
mathematics and science subjects, and unsuited to teaching goals (Roach, 2003). Smith, Torres-Ayala and Heindel (2008) expressed that “One may expect that certain disciplines may work more gracefully with the current e-learning tools than others.” This is in responding to find the best CMSs or the best or most useful system features for any given institution (Smith, 2008). The Roach study also found that there are various factors that slow faculty to adopt the CMS, which are lack of time to learn and use CMS, problems with student CMS use, inflexibility of the software, and inability of the CMS to map to teaching or organizational goals. In addition to the findings, Roach (2003) concluded in quoted:

- CMS area of measurement tools are weak, particularly the tools and reports,
- Less than 27 percent of faculty and instructional staff use CMS for fully online courses,
- CMS is primarily used for delivery of static contents,
- Administrative leadership plays a strong role in encouraging and shaping CMS faculty use,
- Training in CMS use is essential to encourage more effective uses of the technology and higher levels of CMS faculty use,
- Most faculty use a CMS as an administrative tool,
- CMS results in a sort of “accidental pedagogy, because faculty to rethink about their instructional environment and course instruction,
- Students’ technological literacy discourages faculty to use less CMS,
- Faculty resistance to CMS because of their perception that the tools diminish their control over their teaching and environment,
- Many faculty see the CMS as a way to protect their own intellectual property,
- Faculty concerns of CMS change management, upgrading to another version and changing to another CMS product (Roach, 2003).
In the Roach (2003) study, CMS advantages and challenges were also examined and interpreted from various aspects, which are faculty and instructional staff support, students, and administrative leadership/university personnel. The findings support and guide this research study on which CMS tools to be examined and how to categorize them. It was stated that CMSs are being used not only in a classroom, for teaching and learning environment but also in data managing, such as administrative personnel are using CMSs to manage student data, institutional tracking, and academy related reports.

Along with Roach’s study, Fredrick, Director of Libraries and Instructional Technology for the Shaker Heights City Schools, expressed CMS should go beyond a classroom and online teaching and learning. She stated that “…more and more schools are implementing Moodle™ as their course management system. More and more teachers use this tool daily,” and then raised a question, “are more and more school librarians stepping up to use Moodle™?” (Fredrick, 2011). Fredrick addressed how Moodle, as an example, can be used and how it is being used for library services at various educational institutions. She indicated one of the advantages of Moodle and a Course Management System that it goes beyond teaching and learning in a classroom. As Fredrick was inspired and expressed that Moodle or a Course Management System is a way to extend a library’s online presence and “be a home” for the “24/7 world of learning for students” (Fredrick, 2011). To support Fredrick’s statement, it was stated that the University of Minnesota Libraries has advocated for a transition from Blackboard WebVista to Moodle because of “its open architecture, community development model, and potential for service integrations” (Duin, 2010).

In responding to the rapid on-going growth of online courses, especially in higher education, and needs of management for online courses, student’s data, and institutional reports for faculty, students, and administrative personnel, the marketplace has seen many companies that have competitively designed and developed an online Course Management System. These systems are differently
named and introduced to the web-based facilitators and institutes in order to enable the convenience of two-way online learning and teaching and respond to the described needs, for example, WebCT, Blackboard, Virtual-U, Embanet, Eduprise, Real Education, eCollege.com, TopClass, Softare’sFirstClass, Lotus, Design2Learn, LearningSpace, Symposium, WebMentor, Convene, Serf, Sakai, Angel, Moodle, etc. (Dabbagh, 2001). However, the opinions regarding CMS are changing and vary with each CMS or its users claim different ones to be a better system. For example as follows:

Dougiamas, Moodle Founder and Owner, believed that what made Moodle as a better CMS than the one he had to work with at a university in Perth, Australia is that it is built by educators, not engineers. Cole and Foster (2007), the authors of Using Moodle; Teaching with the Popular Open Source Content Management System, stated that Moodle started with the “education process” not an “engineering process” (Foster, 2007).

“Global innovation is by nature not static and moves at a rapid pace. Open source may meet some minimum standard of LMS competency, but only Blackboard can grow, adapt, and evolve with the customized and ever changing needs of your students and faculty” (Blackboard, 2009).

“WebCT, Inc. is the world’s leading provider of e-Learning solutions for higher education. WebCT began with an educator’s dream for his students: a flexible, integrated environment where he could use the latest technology to foster inquiry, encourage discourse and inspire collaboration. Today, our mission is to help institutions deliver on their commitment to educational excellence with enterprise-wide learning management solutions which integrate the richest and most flexible pedagogical tools with existing campus infrastructure. In support of that mission, we have created a family of products and services that are being used to transform the educational experience of students around the world” (WebCT, 2003).
In spite of statements and claims, over the development time some CMSs stayed, some consolidated (Roach, 2003), for example, WebCT and Angel. These showed that CMSs are continuingly evolving while online education is rapidly growing. WebCT, an early adopter, is one of the CMSs that merged to another CMS, Blackboard, in 2006 (Blackboard, 2005). It was originally developed by Murray Goldberg, a faculty member in computer science at the University of British Columbia. WebCT has significant impacts on other CMSs and has set a tone and vision for other product's development.

Michael Chasen, Blackboard President and Chief Executive Officer, stated "This merger makes tremendous sense for our clients, shareholders and employees. It marks an unparalleled opportunity for two successful, mission-driven organizations to unify with a singular focus on being the premier partner and platform for educators on a global basis" Blackboard believed that consolidations strengthen Blackboard and provided benefits to their clients (Blackboard, 2005).

Three years later, according to Washington Business Journal (2009), Blackboard purchased ANGEL, a private Course Management System (Clabaugh, 2009). ANGEL was known for excellent customer service and particularly successful with teaching-oriented institutions and community colleges (InsideHigherEd, 2009). After the first consolidation with WebCT, Blackboard became the largest leading commercial CMS company (Lederman, 2005).

As noted on highly competitive CMSs, they are generally grouped into two main categories, commonly known and called as commercial or proprietary and open-source CMSs. Blackboard is the dominant commercial/proprietary CMS being used globally (InsideHigherEd, 2009). After the consolidations with WebCT and ANGEL, it has "more than 5,800 schools, government agencies and corporate customers" (Clabaugh, 2009). Moodle, Desire2Learn, and Sakai are at the top three tools, as an open-source CMS, currently on the market (K. Green, 2010). Moodle is leading and
being used as an open-source CMS in over 210 countries, with the most registrations from the United States of America (Trust, 2011).

In details, according to the statistical data from the 2010 Campus Computing Project’s annual survey, the top four CMSs being used in higher education, including public and private and two-year and four-year colleges and universities, are: 57% reported using Blackboard, 16% reported using Moodle, 10% reported using Desire2Learn, and 5% reported using Sakai (K. C. Green, 2010). The results showed Moodle and Sakai, open source LMSs, have a significant market share in North America. In combining, slightly more than twenty percent of colleges and universities surveyed primarily used either Moodle or Sakai as its centrally supported, institutional LMS. Blackboard, as a commercial/proprietary LMS, has the largest share in the market. However once the three largest non-Blackboard LMSs were added up, they made up of over 30 percent. Dr. Green, the founding director of The Campus Computing Project - “the largest continuing study of the role of information technology in American colleges and universities” stated in the report that “... Blackboard as the campus-standard LMS has dropped from to 71.0 percent in 2006 to 57.1 percent in 2010. Blackboard’s major competitors are Desire2Learn, Moodle, and Sakai. All three have slowly but steadily gained attention, campus credibility, and market share in the past three years” (K. C. Green, 2010).

Ideally, utilizing any Course Management Systems (CMS), both online instructors and students share the integration responsibility. The instructors have more opportunities and varieties of providing efficient assistance to the students. Conversely, being at different locations, students can also get help as needed with less difficulties and shorter time delays. Generally, CMSs are beneficial and purposely serving the same populations and similar goals in higher education. However, the “best CMS” is defined differently and the “best fit” is varied based on each institution’s goals. The one that works best for one institution may not be the best for another.
For instance, at the University of North Carolina at Charlotte, rapid enrollment growth is predicted. The university needs the Course Management System that is "quick to learn, easy to use, reliable, and able to accommodate our evolving needs, particularly in respect to increasing class size" (Cato, 2009).

For many faculty, it is not about "the size" or the "popularity" of the CMS, but more importantly it is about which CMS provides tools that will effectively respond to their overall needs which they may vary from one to another. Course Management System is not just a place that online instructors use to post course syllabi, schedules and content online, but it is an accessible, flexible and user-friendly product that is designed to meet the desires of each constituency in the educational enterprise, facilitate the instructors to deliver the online course content with the varieties of effective built-in features, and integrate with educational experiences to the online students. Colbey (2000) said, "It [CMS] does not aim to replace the teacher or the existing textbook curriculum, but merely augment it." For students, Hollaran believed (2001) CMS allows the online students access to the course anytime needed. All the course materials and instructions are provided on the Course Management System. All the students need to do is log onto the online course and prepare for the next course meeting by reading the online syllabi and announcement to be ready. Students need not to worry about taking notes and outing paper-based materials or handouts together. They need not to keep track of their documents. They can just simply, save and submit their work through the communication tools (Holloran, 2001). For support of social interaction, the CMS allows the students to frequently communicate with the instructor(s) and do so more effectively by using the communication tools to enhance correspondences, avoid high possibility of misunderstanding and enable a capability to indicate non-verbal social cues, such as "communicate an understanding of material discussed; signal a participant’s turn to speak; and, obtain a better understanding of the material communicated by observing the speaker’s non-verbal cues" (Redfern, 2002).
In higher education, there are some trends and issues of the Course Management System (CMS) that are being globally discussed in various institutions. Most common discussions are related to a selection and comparison between the commercial versus the open-source CMSs and their advantages and challenges, functionality and usability, demands of CMS, technology tools and CMS evolvement, CMS (re)evaluation due to institutional budget and forced migration/upgrade, switching between CMSs, and CMS consumer markets and its future. The followings are the examples of the discussions:

“Blackboard’s announced plans to terminate support for its legacy LMS products have been a catalyst for many institutions to review the campus LMS strategy and to evaluate other LMS applications” (K. C. Green, 2010).

“Thirty-five percent noted they were considering switching their LMS in the next few years, whereas only thirty-one percent noted they were considering switching in last year’s survey” (Council, 2008).

“... the Learning Management System (LMS) Transition Task Force... is charged with recommending a Learning Management System to replace the current system (Vista 8) which will no longer be supported by Blackboard effective January 2013” (Force, 2011).

“It seems that the recent merger of Blackboard-WebCt in February 2006 and a substantial increase in fees may have prompted a growing number of colleges to review their learning management system (LMS) commitments. Thirty-one percent of the respondents indicated they were considering switching from their current LMS” (Council, 2008).

“Instructure’s Canvas product...offered the best match to higher education’s criteria for a Learning Management System...we [UEN] will continue realizing the
cost savings and other benefits that we have been able to provide to state colleges and universities...” (Network, 2010).

“... (b) the KCTCS [Kentucky Community Technical College Systems] uses the new version of Blackboard, so if we're serious about getting more transfer students, we should perhaps use what KCTCS is using” (Morrison, 2010).

“...Moodle is user friendly and will provide comparable functionality for faculty, staff, and students while providing the added benefits of flexibility, customization, and product control and cost savings” (Cato, 2009).

“...the many well-known risks of investing in open source products, and accounting for several hidden costs commonly incurred with open course products” (Blackboard, 2009).

“...more than two-thirds (70.3 percent) of the survey participants agree/strongly agree that mobile [LMS] apps are an important part of our campus plan to enhance instructional resources and campus services... students expect their institutions to provide the kinds of resources and services they experience and enjoy as consumers. Mobile apps provide online access to instructional resources and campus services from the buttons on your smart phone” (K. C. Green, 2010).

“...Although Instructure is relatively new to the market, the Canvas product is very innovative, and the company is solid and poised for growth...it offered the best match to higher education's criteria for a Learning Management System...” (Network, 2010).

With the rapid evolution of CMSs, along with its trends and issues, and changing in technologies and higher education, it is critical for colleges and universities to recognize and analyze advantages and challenges of selecting commercial and/or open-source CMS(s) that would best fit, serve its goals and/or missions, and promise in the future. This is to avoid loss of resources and efforts,
prevent avoidable interruptions, and strengthen the online teaching and learning environment and its future. Some criteria to determine the advantages and challenges of selected CMSs are, for example, the accessibility and stability, features and usability, scalability, interoperability, security, integrations and technical supports, responding to needs and goals and/or missions, costs and savings, et cetera.

**Selected Course Management Systems: Transitioning, Considerations, and Overall Perceptions**

In 2009, Payette and Gupta conducted the **Transitioning from Blackboard To Moodle – Course Management Software: Faculty And Student Opinions** study at Adelphi University in New York to “determine what the faculty and students think about the use of CMS... and the comparative advantages and disadvantages of each system.” The comparisons between Blackboard and Moodle were studied. In the study, it was stated that, from the IT standpoint, the three main factors that led to the migration from Blackboard to Moodle were inadequate system support, inability to support Web 2.0, and increasing cost escalation. The study findings found that 47.4 percent of all (34) faculty reported that Moodle is better than Blackboard while 74.9 percent of all (390) students, graduate and undergraduate, reported that Moodle is better. There is a large difference of overall perceptions about Blackboard and Moodle between the faculty and students at the Adelphi University (Payette, 2009).

In 2006, San Francisco State University (SFSU) was facing various problems with its current CMS, Blackboard, although the problems were not identified or discussed in the report. The university decided to reassess its Course Management System and seek for an alternative. The Academic Technology group was to evaluate and conduct a comparison study of CMSs such as Moodle as a potential replacement to Blackboard because of its current problems. The comparison study was based on faculty perspectives and experiences on using Blackboard and Moodle. The report
was prepared and presented by two of the selected faculty, Dr. Brian Beatty, A Professor of Instructional Design and Technology, and Dr. Connie Ulasewicz, an Assistant Professor in the program of Apparel Design and Merchandising, to provide "a glimpse into some of the factors that may be important considerations as more universities transition from commercial LMSs [CMSs] to open-source systems such as Moodle" (Beatty & Ulasewicz, 2006). The report stated that "70 percent of all courses at SFSU use online technologies" (Beatty & Ulasewicz, 2006). And approximately 90 percent of SFSU faculty who use these technologies use Blackboard and the rest of them use open-source CMS, such as Moodle.

Prior to this study, Dr. Ulasewicz had never used any CMS for her teaching, in opposite, Dr. Beatty had some experiences teaching with Blackboard since 1990 although he had never experienced Moodle. He had been using CMS as online instructional tools for his on-campus classes as a high school science and math teacher to the graduate level. In the last two years prior to his involvement to this study, he used Blackboard for teaching in every class.

After attending two Blackboard workshops, Dr. Ulasewicz stated, "My experience with other online tools such as Blackboard for online discussions is limited... the tool was not intuitive, interactive or creative enough to grab my attention." However, after a one-week Moodle workshop, she indicated that Moodle "inspired me," and expressed that "what initially attracted me to Moodle was the visual presentation of the screen with the three columns of information that could easily be manipulated and updated throughout a semester" (Beatty & Ulasewicz, 2006). She believed Moodle's interface is superior and flexible. However, Dr. Ulasewicz prefers Blackboard in dealing with students having difficulties in sharing work.

In the report, Dr. Beatty addressed four main comparison areas, which are interface and usability, discussion forum tool use, assignment posting and sharing
among students, and the promise of new features. In the area of the Interface ease of use and organize, he and his students prefer Moodle over Blackboard. Dr. Beatty (2006) found that the “interface for Moodle is much more intuitive and easy to use than the instructor interface in Blackboard...the editing tools allow for quick re-ordering, indenting, editing, deletion, (de)activation and allow for student grouping for each activity separately.” In Blackboard, he stated “It required a minimum of three clicks to view an editing page,” This is one of the most important differences between the two interfaces (Beatty and Ulasewicz 2006). However, in the areas of the author control of posts in discussion board and difficulty sharing student work in Assignment area, oppositely, Dr. Beatty and his students prefer Blackboard over Moodle. With Moodle he found no way to allow post authors to edit or modify the posts on the discussion board or allow students to see each other’s uploaded work in the Assignment areas. One of student comments about the posts was “not being able to edit threads that had been posted more than 15 minutes ago” and “15 min cutoff for editing” (Beatty & Ulasewicz, 2006). Per the promise of new features, in contrast, Dr. Beatty prefers Moodle over Blackboard because of being an open resource, which means it expectantly allows rapid development without waiting for a full release unlike a commercial CMS. He believes that “software fixes will happen more quickly and new useful features will be developed more rapidly” (Beatty & Ulasewicz, 2006). This means the availability of features are not limited and users can modify the system to fit their needs whenever they want. This belief and understanding goes along with Machado and Tao’s statement (2007) that “the main advantages [of open source]...are the ability to modify these products and redistribute them back into the community....new features...can be integrated into the users’ existing system as needed at minimal cost” (Michael Machado, 2007).

For example, the Office Add-in for Moodle (OAM) - versions 2003, 2007 and 2010, is one of the free, newly developed features that can be integrated into Moodle. This feature is an add-in for Microsoft Office that allows educators to open and save
Word, Excel, and PowerPoint documents to their Moodle website without having to switch back and forth between Office applications and their web browser (Microsoft, 2009). As Machado and Tao (2007) expressed that there are many creative and active developers in the Moodle open source community around the world, and they have been constantly developing new features that are for anyone to use and can be integrated into the system without having to wait for a full release unlike the commercial system. Moodle is known as a community-driven open source system, and this is one of the factors that makes Moodle a leading open source CMS. Machado and Tao (2007) further described advantages of open source are "...open source community...free of licensing costs" (Michael Machado, 2007). Along with Machado and Tao's expression, North Carolina Community College System (NCCCS) stated that "Open source describes software distributed under licenses guaranteeing anyone the rights to freely use, modify and redistribute the source code. The open source paradigm allows concurrent input of different functions, approaches and priorities which differ from the more closed, centralized models of proprietary software development" (System, 2009). Open source applications are very beneficial for the users, and these developed features are free of licensing cost. This attracted more institutions to reconsider about open sources. Therefore, the proprietary product, like Blackboard with an entry-level system starting price around $10,000, is facing some serious competition in this "free" environment (Association, 2008). However the American School Board Journal (2008) argued that the "free" here means "freely available," rather than freely implemented. Institutions will still need to spend some resources in order to use and maintain them as the implementation of open source application still requires hardware, networks, staff, training, and expertise (Association, 2008). Rhoads, assistant Provost at the University of Louisville (2008) also agreed that open source software is free, but not without cost. She addressed "open source software does not have a corporate entity behind it, institutions have to be self sustaining in application development and support... to provide ongoing support services" (Ray, 2008).
Another key factor of CMS that needed to be considered is its integration to other applications. Ellis (2009) addressed an important point that the selected CMS(s) needs to be able to work with other application systems seamlessly with minimum supports, such as HR and accounting, student database, which would make the selected CMS(s) effective and efficient across the institution. He believed each CMS should be able to "centralize and automate administration, use self-service and self-guided services, assemble and deliver learning content rapidly, consolidate training initiatives on a scalable web-based platform, support portability and standards, personalize content and enable knowledge reuse" (Ellis, 2009). He also recommended that LMS should have others functional requirements such as, "integration with HR, administration tools, content access, content development, content integration, skill management, assessment capabilities, adherence to standards, configurability, and security." With these required functionality, this would allow the across-system integration and connect all database management systems and student data applications (Ellis, 2009).

The 2009 Learning Circuits survey on LMSs (or CMSs) found that the highest ranking features of LMSs [CMSs] are Reporting (52.8%), Compliance tracking (46.5%), and Assessment and testing (42.5%). Once asked to identify the drivers for implementing an LMS at their organizations, the responses showed that the highest ranking drivers are Centralize management of learning activities (66.7%), Measure training usage (29.9%), and Track regulatory compliance (28.7%). In addition, the survey showed, the highest ranking challenges to implementing an LMS are Customization (46.6%), Content integration (37.5%), and Employee buy-in (35.2%) (Ellis, 2009).

As a combination of problems such as forced upgrading or migration, license fees, cost savings, and across-system integration between systems, Morehead State University is another institution that is currently re-evaluating its use of Blackboard and considering switching to Moodle. As Dr. Gary Holeman, Assistant Vice
President for Technology of Morehead State University (MSU), shared with the Trail Blazer (2011) that "the version of Blackboard currently used by the university will no longer be supported by October 2011," he also stated the university does not believe that implementing Moodle would have a significant impact on the students but major savings to the university (Todd, 2011). The cost of web hosting and additional support items by an outside company is $120,000. Dr. Charles Patrick, Assistant Vice President for the University College reported that the university is working on "a resolution regarding possible Blackboard conversion to Moodle" by conducting an initial review of Moodle and to carefully look at the functionality between the two systems and the data integration aspect of Moodle (M. S. University, 2010). Holeman further stated (2011), "a key advantage of using Moodle is the level of integration between Datatel, Mymoreheadstate portal, and Moodle itself." He described that with Moodle, students can access to Moodle, new announcements and assignments of their online courses, class rosters, and grades directly from Mymoreheadstate portal, as they all are integrated. Holeman also stated that "With our current system, if a student registers for a class someone has to run a program to manually add them to the Blackboard course...we want to make it so that adds and drops go through the whole system automatically." Blackboard will be replaced by the beginning of the second summer semester if the MSU administration decides to migrate to Moodle. If not, the current Blackboard will be upgraded and in place by the fall 2011 term (Todd, 2011). To evaluate Moodle Course Management System, Morehead State University chose Moodlerooms, a company providing web hosting, support, and its Moodle-core application, as a vendor, to provide product and support of Moodle implementation at the university.

Like all technologies, computer-based applications, and instructional tools, Course Management Systems have advantages and challenges. Especially as CMS are constantly evolving, the advantages and challenges may vary based on which environment they are being implemented into and for what purpose. Besides the
advantages, Roach (2003) identified that there are various challenges in supporting and providing a CMS in post secondary education, such as “increasing acquisition and support cost, concern of student readiness, marketplace volatility, and ongoing faculty training” (Roach, 2003). All of these factors need to be considered as a part of the decision making of CMS selection.

According to the 2007 Instructional Technology Council (ITC) survey (2008), in supporting Roach’s study, data showed the greatest challenge of CMS for administrators was support staff needed for training, while the least challenge was student acceptance. Having four years of data, the results have remained consistent each year and are in agreement with data collected by other large national surveys (Council, 2008).

Consequently, it is essential for each individual institution to assess their needs, cultures, capabilities, and/or goals and determine overall CMS advantages, challenges, and the future of a selected web-based Course Management System prior to adopting “the best” system although the best CMS is variously defined. For example, North Carolina Community Colleges defined the Best Learning Management System (LMS) as “one in which all LMS components are considered within the total learning infrastructure of North Carolina Community Colleges...the following attributes: Interoperability and Flexibility, Cost effectiveness, Support and Training, Ease of Use, Scalability, and Sustainability” (Bill Randall, 2010). Importantly, to find the best CMS, each institution needs to clarify its unique selecting criteria and should evaluate each selected CMS as a complete package rather than comparisons of each feature since needs are changing in education, CMSs continue to mature, technologies change rapidly, and new features and capabilities are constantly developed and added.
A Brief Historical Review

Transition and Determination: Factors and Selecting Criteria

Studies show institutions try to make their best decisions on selecting “the best” Course Management System, commonly by defining its goals and needs, setting the selecting/determining criteria, and appointing or forming a taskforce and/or a committee to conduct a study to recommend a CMS, thinking that they will select “the best” and stay with it.

At the University System of Georgia, for instance, some guiding principles for recommending a selected CMS are set out for a CMS that “…meets 21st century needs of students and faculty...will be used for multiple purposes... maintain affordability and increase efficiency... provides optimal performance/stability and supports” (Force, 2011).

Unfortunately, some institutions have been faced with making another decision to stay with the selected CMS or to migrate/switch to another. Not because of failing to select the best CMS, but because the selected CMS is consolidated, merging to another CMS, et cetera. There are varieties of factors that contributed into institutions making such a transition; however, the common key factors will only be focused and discussed in this research. In higher education, the common key factors are the unforeseen budget cut, institutional changing needs, and student enrollment growth along with the increased licensing fees and costs on the current CMS, usability and functionality, recurrent reported dissatisfactions on its CMS, and/or a CMS forced migration or upgrade.

From 2010 Managing Online Education Survey, it showed in the fall 2009 to 2010 “eighty-eight percent of campuses use the same LMS for their online and on-campus programs” (K. Green, 2010). The results also showed “forty-seven percent are currently reviewing their LMS strategy” while “twenty-seven report plans to change the LMS in the online program in the next two years” (K. Green, 2010).
As described, there are varieties of the Course Management System (CMS), also referred to as Learning Management System (LMS) and Virtual Learning Environment (VLE), whereas Debbagh (2001) also referred to it as courseware products, online educational delivery application, online course delivery software products, or web-based training products that are available in the marketplace for the online users (Debbagh, 2001). They have been in existence for quite a number of years although the different systems are constantly changing, some new advancements include "better graphics, more online delivery and more teacher-to-student communication components" (Colbey, 2000). Previously stated, in the higher education environment, CMSs trends and issues are globally studied and discussed in various aspects.

For the purpose of this research, some discussions in determining advantages and challenges of the leading CMSs, Blackboard version (commercial/proprietary CMS) versus Moodle version (open source CMS) with Moodlerooms support, will only be addressed. The following are examples of the reports and discussions about advantages and challenges of Blackboard versus Moodle and a commercial/proprietary CMS versus an open source CMS.

The 2007 Distance Education Survey Results, a total of 500 institutions were surveyed with a statistically appropriate cross-section of responses. The survey questions were of four categories: general information, administration, faculty, and students. The report showed seventy-seven percent noted that they use Blackboard/WebCT, which is a decline of seven percent from the 2006 survey and an increase for Moodle from less the four to more than ten percent (Council, 2008). Following are some statements related to this example.

Machado (2007) stated "The disadvantages to open source software are a lack of dedicated support...and if an organization modifies the common code base too dramatically the ability to upgrade to future releases of the software is impaired...also requires the addition of new personnel or additional training for current personnel."
“It seems that the recent merger of Blackboard-WebCT in February 2006 and a substantial increase in fees may have prompted a growing number of colleges to review their learning management system (LMS) commitments” (Council, 2008).

“Blackboard source code is closed, but its open architecture can accommodate additional program functions” (Association, 2008).

“two of the most compelling” aspects about Blackboard is that “(a) the modules that various publishers have produced work with Blackboard but do not work with Moodle…”(Morrison, 2010).

“open-source…open architecture, community development model, and potential for service integrations… source code is freely available, the end user has full control over all parts of the project like data storage, integrations, the look and feel, etc.” (Technology, 2010).

“Blackboard Vista Enterprise is designed to allow the system to interact with other 3rd party systems” (Technology, 2010).

“open source architecture…promises flexibility and adaptability to our faculty and student needs” (Cato, 2009).

During the process of making a decision on selecting CMSs, such as Blackboard and Moodle, often a comparison study between CMSs is conducted. Institutions and online instructors are concerned about which product has the least challenges and most advantages that fulfill their goals and/or mission for teaching, learning, and managing. Monami (2010), the author of the Comparison between two Learning Management Systems: Moodle and Blackboard indentified six main factors to be considered for the comparison between CMSs which are Pedagogical Factor, Learner Environment, Instructor Tools, Course and Curriculum Design, Administrator Tools, and Technical Specification. He expressed that most features have a lot in common, but “also have some key differences which make each one special in its own way”(Momani, 2010). Brett (2000) advised that each CMS differs in the amount and types of features that it provides for the distance teaching and learning members. It is the responsibility of the facilitators to decide which one is
appropriate for their students and faculty populations’ needs. Before considering the CMs’ effectiveness, Machado (2007) stated that “the user experience must be studied and analyzed to provide the optimum solution to meet pedagogical needs of both faculty and students.”

Otto (2011) conducted a comparison study called the Blackboard Moodle Feature Comparison. In his report, he addressed some differences of the features between Blackboard 9.1 SP3 and Moodle 2.0.1+ in a table format. All the features were categorized into eight key areas, which are the Content, Assignments, Tool, Test/Quiz, Communication, Course, Permissions and Roles, and My Institution/My Home (Block). The list of differences in features is as follows: in the Content area, Blackboard is lacking the Multilanguage filter feature; however, there are no different features in the Assignments and the Permissions and Roles Areas between both systems. It also listed that in the Tool area, Moodle is lacking the Grade blogs, Search files (course), Journal, Graded journal, and Graded wiki features as well as the Export submissions (answer) and the Hotspot question type features in the Test/quiz area. Also, the Anonymous posts, Subscribe threads, and Moderate a forum features in the Communication area, under the Forum subarea are not included in Moodle. In the Course area, Moodle is lacking the Group Selection and Early warning system features; however, Blackboard is lacking the Course formats (forum, topics format, weekly format) feature. Lastly, in the My institution/My Home (Block) area, Blackboard is lacking the RSS Feeds feature, but they both are lacking the Download of complete course content feature (Otto, 2011).

There are different studies showing that there is no significant different between Blackboard and Moodle once their functionality and usability were compared, such as the Machado and Tao comparison study in 2007 on the Blackboard vs. Moodle: Comparing User Experience of Learning Management Systems. The purpose of the study was to compare the usability and effectiveness of Blackboard and Moodle based on experiences of faculty and students at the California State University Monterey Bay. The surveys were designed to collect data to attempt to
answer questions about which CMS is more efficacious...has the superior user interface...provides the most desired functionality...has the shallowest learning curve...and do the users prefer? With high confidence in their validity in this study, Machado (2007) concluded that “there was no clear winner when the systems were compared on functionality”. However, when their entireties of Blackboard and Moodle were compared, the users preferred Moodle over Blackboard. After analyzing the collected data, they stated that the results of their study “are echoed by the two studies” in the prior works section of the paper. In addition, the comparison study concluded that Moodle is the “more efficacious and effective” than Blackboard (Michael Machado, 2007).

As one of the key factors being forced migration or upgrade, at the University of Minnesota and the Utah Education Network with 109,000 college students plus 40,000 K-12 students and teachers (Network, 2010), for instance, are ones among those who were forced to reconsider about their current CMS, Blackboard WebVista, and there was a possibility of its continuation by upgrading or a migration by switching to another CMS. The main reason was because Blackboard announced that beginning in January of 2013 Blackboard will no longer offer technical support for WebVista. As concluded, the University of Minnesota decided to “not offer an enterprise application that is not supported by its vendor, as critical code changes to the application will no longer be made and service will not be reliable.” The University was recommended to focus on Moodle as “the sole centrally-supported CMS” and not renew its WebVista license (Minnesota, 2011).

At the University of Louisville (UofL), one of the institutions that is facing budget crisis in the higher education and although the university is aware of the unforeseen budget cut situation, the university has no plan to migrate to another CMS, but is staying with its current Blackboard. Currently, the Blackboard license fee is heavily discounted since the university is a part of consortium universities and colleges in Kentucky. The university did not think by switching over to an open-source CMS, like Moodle, even with a free license fee, will provide a significant
saving to the university nor add benefits in its teaching and learning aspects. Furthermore, Gale Rhodes, assistant Provost at the University of Louisville believed “To change systems under the present circumstances would be a time-consuming and costly transition that would not be beneficial to students and would separate us from the mutual supportive bond we now share with the other higher education institutions in Kentucky” (Ray, 2008).

Due to the institutional changing needs, the Louisiana State University (LSU) and A & M (2007) was one who reevaluated its current CMSs. The university was supporting two course management systems, which were Blackboard (a commercially licensed application) and SemesterBook (a locally developed application). Although it was believed that a variety of CMSs may allow faculty greater flexibility and choice, the LSU Flagship Information Technology Strategic (FITS) Plan (2006) stated that “The University must provide a single course management system that responds to the changing needs of the University.” For students’ best benefit, the FITS stated that too much variety may “force an undue hardship on our student populations to essentially learn multiple systems.” As a result, five CMSs were critically evaluated: Blackboard, Angel, Desire2Learn, Moodle, and Sakai. The subcommittee recommended Moodle as a single CMS and to be solely implemented by fall 2007. It was stated that “Moodle provides the greatest potential for meeting critical instructional and administrative needs quickly, efficiently, and effectively while stabilizing long-term costs” (L. S. University, 2007). After the successful migration from Blackboard and SemesterBook to Moodle, LSU is recognized as a national leader in this enterprise (System 2009).

Some institutions, like the University of North Carolina (UNC), experienced combined driving factors, for instance changing needs, student enrollment growth, functionality and usability, and licensing fee and cost savings. In 2008, at the University of North Carolina (UNC), the UNC Tomorrow initiative predicted rapid growth of student’s enrollment at UNC Charlotte and emerging of another campus.
The university was facing changing needs, and this made the University reconsider the appropriateness of its current Learning Management System (LMS), Blackboard Vista (Committee, 2008). In responding to the change, its instructional needs, and CMS’s evolution, the Learning Management System Evaluation Committee was appointed to evaluate the current level of faculty and students satisfaction of Blackboard Vista (Bb V), and assess the need for exploring alternatives – especially open-source systems, and report the findings. The ultimate goal of this investigative and exploratory evaluation and assessment was to look for a CMS that is “easy to learn, easy to use, reliable, and able to accommodate our changing needs” (Committee, 2008).

After lengthy discussions, explorations, and analyses at biweekly meetings, the committee agreed that Moodle offers various potential benefits. It seems to be easy to adapt, easy to learn, easy to use, and align with UNC at Charlotte’s current and projected instructional mission. The committee recommended an implementation of a trial evaluation (pilot study) of the Moodle system involving UNC Charlotte faculty and courses be carried out during the 2008-2009 academic year (Committee, 2008).

As recommended, the pilot study of Moodle was implemented. The main focus of the study was the comparison between Blackboard Vista and Moodle on pedagogy, Disability Compliance, and Financial aspects. There were 10 faculty teaching 23 courses to 647 students who participated in the fall 2008 semester and 39 faculty teaching 117 courses to 2,639 students during the Spring 2009 semester. Nearly the entire group of participating faculty had prior experience teaching with BbV (Cato, 2009). The 2009 Final Report and Recommendation was conducted and stated that, regarding to the pedagogical results, “There were no cases in which a Moodle function or tool of any kind was rated by either faculty or students as being “worse than Blackboard” (Cato, 2009).

During the fall 2008 semester, the participants involved rated Moodle very highly on various key factors, such as ease of use, flexibility, facilitation of
teaching/learning goals, and correspondence to one’s teaching/learning style. Then, the results from the Spring 2009 semester confirmed the previous findings, these preferences consistently favored Moodle by wide margins (Cato, 2009).

During the study, the Center for Teaching and Learning (CTL) staff found that “Overall [disability] compliance to standards by both BbV and Moodle was good, and no distinct advantage of one over the other was noted” (Cato, 2009). Furthermore, the committee addressed that by switching to Moodle, the University would realize a financial cost savings of 52% in year 2011-2012 and will save approximately 52% of the projected cost for Blackboard Vista in 2011. In conclusion, the LMS Evaluation Committee believed that Moodle, as an open-resource LMS, promises flexibility and adaptability to educational needs since Moodle developers and communities are composed of educators and course designers from around the world, who constantly explore and implement new features. It was stated that “as evident in the previous sections, Moodle is user friendly and will provide comparable functionality for faculty, staff, and students while providing the added benefits of flexibility, customization, and product control and cost savings... It is the Committee’s firm belief that, of the options open to us, Moodle provides the best choice for meeting those challenges” (Cato, 2009).

Another example of the institutions that faced the combined driving factors, for instance recurrent reported dissatisfactions of current CMS, functionality and usability, and licensing fee and costs and sought alternative CMSs is the North Carolina Community College System (NCCCS). During the same time of the CMS comparison study of University of North Carolina (UNC), an Open Source Collaborative: Moodle Assessment report was prepared and presented to the State Board of Community Colleges Finance Committee. The purpose was to assess current Moodle (1.9) application to discover if "Moodle is a viable open source alternative to Blackboard [8.X]" (System, 2009). At the time of this study, Blackboard version 9.0 was not in use by any of the NCCCS institutions. The reasons and decisions to a migration include the following: “... reported
independently that dissatisfaction with Blackboard in the form of application problems, server performance, technical help desk delays, unacceptable hosting solutions, and increasing costs were the primary reasons for seeking an open source CMS solution. Frustrations with these recurring problems were sufficient incentive for college support and academic staff to seek alternatives" (System, 2009).

The utility, ease-of-use, specific functionality, and total cost of ownership between both Blackboard and Moodle CMSs were compared. The study specifically focused on academic concerns such as course navigation, ease of use, communication and collaboration tools, course content, assessment, and upload capabilities (System, 2009). It was stated that overall there are no significant differences between Moodle (1.9) and Blackboard (8.X) on the application functionally. Students and faculty are equally satisfied with both CMS’s ease of use. However, the results showed students’ concern of faculty’s experience and comfort level with the application. The study suggested a need of effective training for faculty.

The study also indicated that the migration period from Blackboard to Moodle was resource intensive and challenging, as stated that “Migration disrupts existing processes, systems, and people” (System, 2009). However, the colleges were satisfied with the overall cost reduction and results at the completion of the migration period due to the support from Moodle.org as follows: “Moodle.org provides a tremendous collection of resources readily available to administrators and instructors” (System, 2009).

The report indicated that overall the migration to Moodle was successful as indicated below:

“After the initial migration, a stable, easy to use Moodle platform made subsequent distance learning [enrollment] growth...by reducing barriers and providing a smooth platform for distance learning instructors. Moodle was found to be less complex and more usable by faculty. Compared to the Vendor CMS, Moodle has proven to be a more user-friendly system resulting in increased use by the majority of
college faculty and more satisfaction [reported] from both faculty and students" (System, 2009).

The analysis revealed the total cost savings from pre to post-transition years for all of the case study colleges was $132,114. The report addressed “Open source cost savings won't be realized until transition is complete and the college is supporting only one CMS” (System, 2009).

Later on, however, Blackboard argued that NCCCS’s investment with Blackboard is more than just the license fees. The investment includes technical and staff training, course content development, training materials, infrastructure, backup and recovery plans, and many other substantial investments not considered in the report. They suggested that going to an open source system such as Moodle “may” result in cost shifting instead of cost savings, and that with the lack of a single and qualified provider for a centralized solution, the 58 colleges “are likely” to go in different directions, incurring localized costs that may lead to increased tuition or taxes (Blackboard, 2009). Also, additional programmers and systems support at each site may need to be hired in which this will be additional cost implications.

Based on the findings, the Learning Management System Evaluation committee concluded that Moodle was a viable alternative to Blackboard in areas of usability, functionality, and total cost of ownership. The team recommended a Learning Management System (LMS) Feasibility Study, a determination of the technical and financial solutions required for the next stage of CMS, and a possibility of a hybrid Blackboard (7.3)/Moodle Course Management System at the NCCCS. The recommended study is to answer the question, “What is the best LMS solution for the North Carolina Community College System?” (System, 2009).

A few months later, Blackboard Inc. responded to the NCCCS Open Source Collaborative: Moodle Assessment Report, although Blackboard responded and concluded without providing any documented studies as evidence. Blackboard stated that there are additional considerations not thoroughly addressed in the Moodle Assessment Report. Included are “the full value that Blackboard can provide and
how it aligns with the mission and goals of the North Carolina Community College System (NCCCS) and the entire State of North Carolina’s public education establishment, the many well-known risks of investing in open source products, and accounting for several hidden costs commonly incurred with open source products” (Blackboard, 2009).

In reference to the mission of NCCCS, Blackboard highlighted their alignment with the following items being quoted:

• Technology that runs the most and the largest distance learning programs in the world.
• Active participation in the development and shaping of K-20 outcomes and initiatives.
• Tools focused on assessment, accessibility and mobile learning for maximum student success.
• Industry standard support and maintenance that allow you to focus on teaching and learning.
• Enterprise standard security to protect student data and minimize disruptions.
• Proven scalability to ensure your programs can grow.

Blackboard continued by explaining the “Top Five Risks to Consider when Evaluating Open Source,” which are Security Risks, Support Risks, Product Roadmap, Training Risks, and Risk of Shifting Focus Away from the NCCCS Mission (Blackboard, 2009).

Blackboard stated that protecting the database information is critical. Blackboard’s claim was Moodle is risky because security vulnerabilities are tested by the community; whereas, Blackboard repairs its own security concerns and fixes are not announced publicly. Blackboard also notes that Moodle support, “when it exists,” comes from several small consulting companies who are also supporting a variety of open source products. This creates risk for the users. In contrast, Blackboard’s
technical support is built into the license fee. Furthermore, it was stated that the company presents a “long-term product roadmap.” Product Next Generation (NG) is a three- to five-year vision bringing together “the best” of WebCT, ANGEL Learning, and Blackboard, unlike Moodle that has only a “short-term view” of the direction of product upgrades. Blackboard’s response also mentions that “there is not a consistent user interface across Moodle modules,” leading to training issues. Blackboard claimed to offer consistent user interface, which minimizes the training risks. Lastly, Blackboard addressed that the core mission of NCCCS does not include managing security, support, training, and maintenance that Blackboard claimed is needed of an open source course management tool and can be costly. The missions of Blackboard and NCCCS is claimed to be complementary.

At the end, there is another list provided of “Blackboard’s Full Offerings and Value Added Services” which was current at the time of Blackboard’s response, but is outdated at the time of this analysis (e.g., Moodle integrates with Plagiarism Detection Tools). Blackboard Learn includes: Blackboard Learn for Course Delivery, Blackboard Learn for Community Engagement, Blackboard Learn for Content Management, Blackboard Learn for Outcomes Assessment, and Blackboard Mobile. Considering the advantages of just Blackboard Learn Course Delivery as compared to Moodle 1.9, in which Blackboard claimed these capabilities were lacking in Moodle, include:

- Retention and Assessment Tools: This allows teachers to develop customized learning paths and provides early warning tool alerts.
- Mobile Learning Tools: It provides the Blackboard iPhone application and a full mobile product strategy.
- Plagiarism Detection Tool: Plagiarism detection software is integrated and included as a part of Blackboard Learn.
• Web 2.0 Experience: Blackboard Learn Release 9 has drag-and-drop content management, contextual menus, and customizable cascading style sheets. Also, new dashboards are included.

• Unique Partnerships Offer Access to Content and Tools: Blackboard has partnered with NBC to provide multimedia archives and partnered with Wimba and Echo360 for web conferencing and lecture capture tools.

Additionally, Blackboard has solutions that can help deploy a mass communication and emergency notification system (Blackboard, 2009). Although published online with the results of the finding, it is somewhat of a corporate brochure, the report noted that security is better in Blackboard than in open source software. However, actual studies on open source software security, including Hoepman and Jacobs (2007), explain that open source security is considered better by many (Jacobs, 2007). Blackboard also noted that the state has too huge of an investment in the embedded base of Blackboard users for NCCCS to begin using a different CMS. Overall, Blackboard versus Moodle comparisons are made and considerable anecdotal evidence is provided in total favor of Blackboard.

As recommended from the NCCCS Moodle Assessment Study (2009), the LMS Feasibility Study, Part II of the Open Source Collaborative Moodle Assessment Report at NCCCS was conducted and reported in August 2010 (Bill Randall, 2010). The best Learning Management System solution was defined and assessed based on the following attributes; “interoperability and flexibility, cost effectiveness, support and Training, ease of use, scalability, and sustainability” (Bill Randall, 2010). After completing the study, the team had determined that “the best LMS solution for the NCCCS at this time is to simultaneously support the two LMSs, Blackboard and Moodle” (Bill Randall, 2010).

The team indicated that “a mandated System-wide migration of Blackboard-to-Moodle is neither advised nor feasible at this time” because of the limitations in
areas of DL support staff, LMS funding, and increased work load of faculty and staff (Bill Randall, 2010). For the best LMS solution, the team also recommended that "a two-LMS solution is advised for NC Community Colleges until further study is completed or sufficient funding for migration is obtained" (Bill Randall, 2010). A further study was recommended to conduct functionality comparisons of Blackboard 9.x and Moodle 2.x (Bill Randall, 2010).

Studies showed there is no clear definition of what the best Course Management System is and no specifically defined criteria of how to choose the best. Overall, CMS is designed and used to respond to the educational and institutional needs for the online education environment. As needs continually change and technologies rapidly evolve, CMS will constantly be developed. Again, Monami stated (2010), they [Blackboard and Moodle] have lots in common, but also have some key differences which make each one special in its own way” (Momani, 2010). From the studies, it seems like either selecting Blackboard or Moodle mostly depends on unique factors, needs, and goals of each institution, case by case. Studies showed both Blackboard and Moodle have advantages and challenges; this could also depend on how they are being looked at. Some advantages may be considered as challenges at different institutions therefore goals and criteria of selecting a CMS need to be defined in order to determine the best.

While there are various existing Blackboard versus Moodle comparison studies internationally, they do not specifically reflect the capabilities, needs, and unique culture of Morehead State University.

This research is considered important because this research provides similar works and their findings from various institutions, this helps other researchers to minimize their time and effort spent unnecessarily. However, the findings will specifically illustrate the Morehead State University (MSU) online students and faculty perspectives of Blackboard and Moodle.
From the collected data, it will reflect the overall faculty and students' evaluation at Morehead State University. The findings of the study may not only be used to advance the body of knowledge relating to selected Course Management Systems, Blackboard and Moodle, but also administrative personnel could use the findings to better understand the online faculty and students evaluation and satisfactions on both systems. The collected data can be used as a part of the determination process among the selected systems and to support the implementation and development process of the selected system at Morehead State University or other institutions. These findings will serve as both evidence that further research is necessary and as a guideline for developing that research.
Chapter III

Methodology

The focus of this descriptive study was to examine the advantages and challenges of online Course Management Systems (CMS) used at Morehead State University such as Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms in the Spring 2011 semester. The research proposal, the survey questions, and survey cover letters were submitted to the Institutional Review Board (IRB) for the Protection of Human Subjects in Research for a review and an approval. As a requirement, the researcher is certified in the latest Social and Behavioral Research method, by CITI Collaborative Institutional Training Initiative, which uses human subjects in any manner for the study. (See Appendix F)

There were eight online faculty members who were contacted. Five faculty members volunteered to participate in the first faculty survey and only four volunteered to participate in the second faculty survey. Each faculty member taught at least one online course using either Blackboard version 7.3 or Moodle version 1.9 supported by Moodlerooms during the Spring 2011. Each faculty member participated in a Blackboard version 7.3 versus Moodle version 1.9 supported by Moodlerooms pilot study from the previous semester; they have some teaching experiences with both Blackboard and Moodle supported by Moodlerooms prior to the Spring 2011 semester. There were two hundred fifty-two online students, who are registered to the courses of the participating faculty, who were contacted, and ninety-three (approximately thirty-seven percent) students voluntarily participated in the survey. Thirteen of them were graduate students, and they were from the same class. However, of the ninety-three students responding, it was determined that three student may not have used both Blackboard and Moodle supported by Moodlerooms; therefore, all data for these three students were filtered from further processing. One student was provided with an incorrect survey web link and took one of the faculty
surveys, it was determined that the responses were invalid and were filtered from the collected responses, and this reduced the total number of valid student responses to eighty-nine. Among the eighty-nine students, there were eighty-five students who had taken a class using Blackboard, and five students who had used Moodle supported by Moodlerooms prior to the Spring 2011 semester.

In Spring 2011 semester, three online surveys, one for online students and two for online faculty (Faculty Evaluation of Blackboard and Moodle Spring 2011; Spring 2011 Course Information; Faculty Experience and Perspectives of Blackboard and Moodle) were prepared and pretested for validity and completion time, each survey having ten questions. The surveys were replicated from the University of North Carolina at Charlotte, the permission to use the contents from the reports and recommendations from Learning Management System Evaluation Committee was granted. (See Appendix D) One telephone interview, approximately thirty minutes, was conducted with a Coordinator of Instructional Design at Instructional Technology Center (ITC).

The Coordinator of Instructional Design at Instructional Technology Center (ITC) was contacted and provided with twelve questions prior to the scheduled telephone interview. The interview was voluntary and was strictly about her role(s) and responsibilities during the transition of the Course Management Systems (Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms), the possibility of the Moodle supported by Moodlerooms transition, and some background information of CMSs used at the Morehead State University.

Both faculty and students were informed that taking the survey was voluntary, the survey could be taken only once, and the submitted responses are anonymous, securely collected, and maintained. They also were informed that they could stop participation at anytime during this study process and the responses were only being used for this study.
The survey cover letter including the first faculty survey web link was sent to the faculty via an email and was opened for seven days. There were five out of five participants to the first faculty survey. The second survey web link was sent out eleven days later and was opened for four days. A reminder email was sent out to the faculty one day prior to the closing date of each survey. There were four out of five participants to the second faculty survey. (See Appendix E)

For tracking purposes, five identical student surveys (Student Evaluation of Blackboard and Moodle supported by Moodlerooms Survey Spring 2011) were parsed according to the faculty member representing his/her classes, each survey generated a unique web link address that was posted and accessed electronically. The survey cover letter including the web link information was electronically distributed to the registered students by the instructor. (See Appendix E) The survey web link was posted for at least fifteen online courses. The surveys were opened for fourteen days, except one survey was extended for three more days at the request of the faculty member. A reminder email was sent out to the faculty two days prior to the closing date.

All the surveyed data were entered into Microsoft Office Excel 2007. There it was categorized into two worksheets (one for faculty and one for students) and checked for any errors. Tables of raw, categorized data from the faculty and student survey respondents were created accordingly and formatted for illustration purposes.

The researcher obtained categorical (nonparametric) data from surveys of faculty and students in online courses for Spring 2011 using Moodle supported by Moodlerooms and/or Blackboard at Morehead State University. Four research questions were designed to guide this descriptive study. The research questions are as follows:

1. What are online students' overall evaluation and satisfaction of Blackboard version 7.3 and Moodle version 1.9 supported by
Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?

2. What are online faculty's overall evaluation and preference of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?

3. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online students at Morehead State University in Spring 2011 semester?

4. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online faculty at Morehead State University in Spring 2011 semester?

Research question three makes use of a hypothesis to test the advantages and challenges between Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Courses Management Systems during the 2011 Spring semester.

To support the validity of the descriptive study with evidence and to derive approximations of statistically appropriate judgments when evaluating the sample data (categorical, nonparametric data), the procedure known as hypothesis testing was used. A testable hypothesis is one that is falsifiable. This includes a set of hypotheses, which includes a null hypothesis (H₀) and an alternative hypothesis (Hₐ). It is possible that results and/or observations will contradict the predictions of a hypothesis. A hypothesis that makes a false prediction is judged as false. This procedure considers that hypotheses cannot be proven true and can only be demonstrated as false. The hypothesis makes predictions that are finite and specifiable. In statistical studies, the degree of variation is considered in judging the falseness of a hypothesis; that is, variations outside the scope of the study could cause
small variations that, although causing a minimal numerical difference, are of such low magnitude as to not be considered statistically significant (e.g., the small differences could be explained by the variations outside the scope of the study).

The null hypothesis (H₀) is used for testing and is a statement that there is no difference in advantages and challenges for Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms based on participating students’ overall perceptions as used at Morehead State University in Spring 2011.

The alternate hypothesis (H₁) is the hypothesis that predicts that there is a statistical difference in advantages and challenges for Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms based on participating students’ overall perceptions as used at Morehead State University in Spring 2011.

To determine if there is a statistical difference in the results of a study, a level of confidence is chosen which is indicated by the Greek letter α. Common levels of significance used in statistical studies are 0.01, 0.05, and 0.10.

In this descriptive study, only categorical, nonparametric data was collected; however, one hypothesis was developed to test with approximated statistical methods the research question regarding the advantages and challenges of Course Management Systems such as Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms used at Morehead State University. A level of statistical significance of 0.05 was used for accepting or rejecting the hypotheses using chi-square.

The one hypothesis developed to help support the qualitative analysis is:

H₀: There are no significant differences in advantages and challenges for Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms based on participating students’ overall perceptions as used at Morehead State University in Spring 2011.
$H_a$: Moodle version 1.9 supported by Moodlerooms and Blackboard version 7.3 have significantly different advantages and challenges based on participating students' overall perceptions as used at Morehead State University in Spring 2011.

A common statistical technique to test hypotheses used for non-parametric data is chi-square ($\chi^2$). Chi-square here is used to test the independence of two sets of non-parametric data. From this, the previously stated level of significance, 0.05, is used along with a table of chi-square values to either accept or reject a hypothesis.

**Design**

The categorical data are from surveys of faculty and students using Moodle supported by Moodlerooms in online courses for Spring 2011 at Morehead State University. The surveys determined those faculty and students who had also previously used Blackboard. Data were collected from four faculty and from ninety-three students. Students included both graduate and undergraduate. Data were collected via surveys (Appendix A) that were replicated from the surveys used for the Moodie versus Blackboard study performed at University of North Carolina. Surveys were posted online and available to all students for an open window of days during the Spring 2011 semester.

The survey results were reviewed to ensure an accurate depiction of the data considering an approximation method would be used on the categorical, nonparametric data. The review process included the filtering of any student or faculty member who had not used both Blackboard and Moodle supported by Moodlerooms. Question 7 and question 9 on the student survey showed that three student respondents, 3% of the total surveyed, had possibly not used both Blackboard and Moodle supported by Moodlerooms prior to the Spring 2011 semester. Therefore, the results of three student respondents were filtered. One student took an
incorrect survey, therefore the results of this respondent were filtered. All four faculty members who were surveyed also responded. As well, all four faculty respondents, 100%, had used both Blackboard and Moodle supported by Moodlerooms.

Instrumentation

The researcher surveyed the Spring 2011 online Moodle supported by Moodlerooms courses at Morehead State University to collect the categorized data.

The survey instrument developed, as replicated from the University of North Carolina study, asked the faculty ten questions on each of two surveys (for a total of twenty questions) and asked the students ten questions regarding Blackboard version 7.3 versus Moodle version 1.9 supported by Moodlerooms Course Management Systems. The survey questions and sub questions for faculty were divided into twenty categories, ten for each survey: Faculty Survey I – Q1: Assessment and Grading Tools; Q2: Communication Tools; Q3: Organization Tools; Q4: Available Abilities; Q5: Interface; Q6: Ease of Use; Q7: Migrate and Import Tools; Q8: Compatibility; Q9: Reliability; Q10: Overall Preference. Faculty Survey II – Q1: Number of online courses currently taught; Q2: Course Number(s), Title(s), and number of students for each course; Q3: Number of Semesters; Q4: Training for Moodle supported by Moodlerooms versus Blackboard; Q5: Experiences and perspectives about Blackboard; Q6: Pros and cons of Blackboard; Q7: Experiences and perspectives about Moodle supported by Moodlerooms; Q8: Pros and cons of Moodle supported by Moodlerooms; Q9: Preference for migration to new version of Blackboard or Moodle supported by Moodlerooms; Q10: Willingness to make transition to Moodle supported by Moodlerooms. The survey questions and sub questions for students were divided into ten categories: Q1: Academic Standing; Q2: Choice of Moodle supported by Moodlerooms or Blackboard for Future Courses; Q3:
Regarding the Moodle supported by Moodlerooms Course Management System; Q4, Q5, and Q6: Comparing Moodle supported by Moodlerooms versus Blackboard; Q7: Number of Blackboard and Moodle supported by Moodlerooms courses taken; Q8: Training requirement for Moodle supported by Moodlerooms versus Blackboard; Q9: Prior experiences with Blackboard and Moodle supported by Moodlerooms; Q10: Satisfaction about Blackboard and/or Moodle supported by Moodlerooms.

Population

During Spring 2011 semester, four faculty members -- who volunteered to participate in this descriptive study -- were offering online courses at Morehead State University. Surveys were opened to those four faculty members and the students in their online (CMS-based) courses during this Spring 2011 semester. Of the ninety-three students and four faculty members responding, three student respondents were filtered for the possibility of not having used both Blackboard and Moodle, one student respondent was filtered for taking an incorrect survey, whereas no faculty respondents were filtered. Of the student respondents, 15% were graduate students and 85% were undergraduate students. (See Fig. 1)
Data Collection Methods

The researcher conducted this study using data collected from surveys of faculty and students using Moodle supported by Moodlerooms and/or Blackboard for online courses in Spring 2011 at Morehead State University. The surveys were replicated from a Blackboard versus Moodle study performed by University of North Carolina. The surveys were posted online for faculty and students to complete during a window of days in Spring 2011. The surveys did not collect the identity of the respondents, although an identification number was assigned to each respondent.

After the surveys were completed by the faculty and student respondents, the researcher completed the necessary steps that the data were collected from the online survey tool and entered into Excel spreadsheets for review.
Data Analysis

The data analysis was processed in six general phases. The first phase consisted of parsing the data into appropriate Excel spreadsheets for further analysis, one spreadsheet for faculty respondent data and one spreadsheet for student respondent data.

The second phase required that the researcher reconfirm that all four faculty members had used both Blackboard and Moodle supported by Moodlerooms. Also, the researcher determined which student respondents had not used both Blackboard and Moodle supported by Moodlerooms and then filtered those student respondents' data from further analysis.

The third phase consisted of checking for errors or any indicated invalid data and filter the responses from further analysis. The researcher determined that one student responded to the faculty survey, and then filtered that student respondent's data from further analysis. Furthermore, the researcher determined that Question Nine of the faculty survey II was to be removed from the findings and further data analysis given that faculty participants did not have full access and technical support to the new version of Blackboard.

The fourth phase of data analysis consisted of grouping the response data into the related question categories and question subcategories. (See Appendix A)

The fifth phase included the determination of totals of the categorized values in the surveys, percentages of responses in question categories and question subcategories, and similar related calculations. Since one spreadsheet was used for each of the three surveys conducted, two faculty surveys and one student survey, the analysis of each spreadsheet used different methods of tabulation appropriate to the categorization of survey answers.
The sixth and final phase used the tabulations from the faculty data and student data spreadsheets for general analysis of the results and to conduct statistical analysis for determining the acceptance or rejection of the hypothesis of Research Question#3 of the study. For the categorical (non-parametric) data, an approximate method of chi-square testing was used.

The research questions as well as the hypothesis of Research Questions#3 of this study were to analyze and determine the advantages and challenges of Course Management Systems such as Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms as used at Morehead State University in Spring 2011. The methodology described in this chapter was ascertained as satisfactory by the researcher to obtain reliable data and to reach sound conclusions relevant to this study.
Chapter IV

Findings

The purpose of this study was to determine the advantages and challenges of selected Course Management Systems, such as Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms used at Morehead State University during the Spring 2011 semester.

It is critical to note that there is a large variation in the sample size between students and faculty (89 versus 4).

There was one student survey conducted, which is the Student Evaluation of Blackboard and Moodle Survey Spring 2011. However, for tracking purposes, five identical student surveys were parsed according to the faculty member representing his/her classes. The survey has ten questions with a number of sub questions and they are specifically relating to the informative student data, overall evaluation and satisfaction, and advantages and challenges of Blackboard and Moodle supported by Moodlerooms. The ten student survey questions are as follows:

1. What is your academic standing?
2. If you were given the option to take courses using either Moodle supported by Moodlerooms or current Blackboard (7.3), which would you choose?
3. Regarding the Moodle supported by Moodlerooms Course Management System
4. Comparing Moodle supported by Moodlerooms to Blackboard (Part 1)
5. Comparing Moodle supported by Moodlerooms to Blackboard (Part 2)
6. Comparing Moodle supported by Moodlerooms to Blackboard (Part 3)
7. Number of Blackboard and Moodle supported by Moodlerooms courses
8. Does Moodle supported by Moodlerooms require more training than our current Blackboard (7.3)?

9. Prior experiences with Blackboard and Moodle supported by Moodlerooms

10. Overall perceptions and/or satisfaction about Blackboard and/or Moodle supported by Moodlerooms

There were two faculty surveys conducted, which are the *Faculty Evaluation of Blackboard and Moodle Spring 2011* survey and the *Spring 2011 Course Information and Faculty Experience and Perspectives of Blackboard and Moodle* survey.

In the first faculty survey, *the Faculty Evaluation of Blackboard and Moodle Spring 2011*, the five respondents participated and successfully completed the survey. This survey has ten questions with number of sub questions and they are specifically relating to the overall evaluation of Blackboard and Moodle supported by Moodlerooms. The ten faculty survey questions are as follows:

1. Rate the Assessment and Grading Tools
2. Rate the Communication Tools
3. Rate the Organization Tools
4. Rate the Available Abilities
5. Rate the Interface
6. Rate the Ease of Use
7. Rate the Migrate and Import Tools
8. Rate the Compatibility
9. Rate the Reliability
10. Rate the Overall Preference
In the second faculty survey, *the Spring 2011 Course Information and Faculty Experience and Perspectives of Blackboard and Moodle*, only four respondents participated and successfully completed the survey. One participant declined to complete this survey. This survey has ten questions with a number of sub questions and they are specifically relating to the online course information and faculty experience and perspectives of Blackboard and Moodle supported by Moodlerooms. Question Nine from this faculty survey was removed from the findings and further data analysis given that faculty participants did not have full access and technical support to the new version of Blackboard. The nine faculty survey questions are as follows:

1. How many online courses you are currently teaching?
2. Please list the Course Number(s) and Title(s) that you are currently teaching. How many students are in each course?
3. Number of Semesters
4. This new system, Moodle supported by Moodlerooms, requires more training than our current system, Blackboard.
5. Please describe your experiences and perspectives about the current Blackboard.
6. What are pros and cons of Blackboard?
7. Please describe your experiences and perspectives about the current Moodle supported by Moodlerooms.
8. What are pros and cons of Moodle supported by Moodlerooms?
9. If Moodle supported by Moodlerooms is selected to be a new Course Management System (CMS), are you less or more willing to make a transition?

To conduct this research, the following four research questions were identified as follows:
1. What are online students overall evaluation and satisfaction of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?

2. What are online faculty's overall evaluation and preferences of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?

3. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online students at Morehead State University in Spring 2011 semester?

4. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online faculty at Morehead State University in Spring 2011 semester?

**DISCUSSION OF RESEARCH QUESTION ONE:**

What are online students overall evaluation and satisfaction of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?

The student survey questions two, three, and ten are responding to this research question One. They are as follows:

*Student Survey Question Two: If you were given the option to take courses using either Moodle supported by Moodlerooms or current Blackboard (7.3), which would you choose?*
Figure 2: If you were given the option to take courses using either Moodle supported by Moodlerooms or current Blackboard (7.3), which would you choose?

For Survey Question Two, regarding the preference of Moodle supported by Moodlerooms or Blackboard for future courses, with eighty-nine respondents, there is a total of eighty-nine responses. For the overall responses, thirty-three responded to prefer Blackboard and fifty-six responded to prefer Moodle supported by Moodlerooms. A difference of twenty-three respondents favored Moodle supported by Moodlerooms over Blackboard, which is almost two-thirds of the respondents preferred to use Moodle supported by Moodlerooms over Blackboard for their future courses.
Student Survey Question Three: Regarding the Moodle supported by Moodlerooms Course Management System

![Bar chart showing responses to Q3 regarding Moodle support by Moodlerooms Course Management System.](image)

Figure 3: Regarding the Moodle supported by Moodlerooms Course Management System
Q3: Regarding the Moodle Supported by Moodlerooms Course Management System

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Moodlerooms</th>
<th>Moodlerooms</th>
<th>Moodlerooms</th>
<th>Moodlerooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodle is easy to use.</td>
<td>77</td>
<td>12</td>
<td>78</td>
<td>11</td>
<td>73</td>
<td>16</td>
<td>63</td>
<td>26</td>
<td>33</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle is flexible.</td>
<td>87%</td>
<td>13%</td>
<td>88%</td>
<td>12%</td>
<td>82%</td>
<td>18%</td>
<td>71%</td>
<td>29%</td>
<td>37%</td>
<td>63%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle helps me reach my goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle fits my learning style.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Regarding the Moodle supported by Moodlerooms Course Management System

Figure 4: Regarding the Moodle supported by Moodlerooms Course Management System (Agree vs. Disagree)
Survey Question Three, regarding the Moodle supported by Moodlerooms Course Management System, includes the sub questions: Moodlerooms is easy to use, Moodlerooms is flexible, Moodlerooms helps me reach my goals, Moodlerooms fits my learning style, and Moodlerooms is more difficult to learn on my own than Blackboard. With eighty-nine respondents for each of the five sub questions, there are a total of four hundred forty-five responses. For the overall responses, three hundred twenty-four or seventy-three percent responded to agree and one hundred twenty-one responded to disagree.

**Student Survey Question Ten: Overall perceptions and/or satisfaction about Blackboard and/or Moodle supported by Moodlerooms**

![Chart](image)

Figure 5: Overall perceptions and/or satisfaction about Blackboard and/or Moodle supported by Moodlerooms

Survey Question Ten, regarding the overall perceptions and/or satisfaction about Blackboard and/or Moodle supported by Moodlerooms, includes the sub questions: Blackboard and Moodle. With eighty-nine respondents for each of the two
sub questions, there are a total of one hundred seventy-eight responses. For the overall responses, one hundred and eight or sixty-one percent responded to satisfied, twenty-three or thirteen percent responded to unsatisfied, and forty-seven or twenty-three percent responded to neutral for both Blackboard and Moodle supported by Moodlerooms.

For Blackboard, fifty-one reported satisfied, nine reported unsatisfied, and twenty-nine reported neutral. For Moodle supported by Moodlerooms, fifty-seven reported satisfied, fourteen reported unsatisfied, and eighteen reported neutral.

**DISCUSSIONS OF RESEARCH QUESTION TWO:**

What are online faculty's overall evaluation and preferences of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?

The survey question ten from the first faculty survey, the Faculty Evaluation of Blackboard and Moodle Spring 2011 (subtitle: Blackboard and Moodle Performance Evaluation), and the survey question five, seven, and ten from the second survey, the Spring 2011 Course Information and Faculty Experience and Perspectives of Blackboard and Moodle, are responding to this research question two. They are as follows:

**Faculty Evaluation of Blackboard and Moodle Spring 2011** (subtitle: Blackboard and Moodle Performance Evaluation)

*Faculty Survey I Question Ten: Rate the Overall Preference*
Figure 6: Rate the Overall Preference

For Survey I Question Ten, regarding the Overall Preference between Moodle supported by Moodlerooms versus Blackboard, with five respondents, there is a total of five responses. For the overall responses, one responded to prefer Blackboard and four responded to prefer Moodle supported by Moodlerooms. The four respondents favored Moodle supported by Moodlerooms over Blackboard.

Spring 2011 Course Information and Faculty Experience and Perspectives of Blackboard and Moodle Survey

Faculty Survey II Question Five: Please describe your experiences and perspectives about the current Blackboard.

Collected Responses/Comments:

- Takes too much time to do even simple tasks.
• I see blackboard as a good means to deliver online information. It's straightforward and easy to use.
• Blackboard is OK. It is very difficult to move through a lot of grading.
• It has some problems, but it is stable and meets my students’ needs.
• Very redundant with actions of clicking OK several times. It is ok as a course management system but it may because of my familiarity.

For Faculty II Survey Question Five, regarding the experiences and perspectives about the current Blackboard, with four respondents, there is a total of four responses.

**Faculty Survey II Question Seven: Please describe your experiences and perspectives about the current Moodle supported by Moodlerooms.**

Collected Responses/Comments:

• Easy to learn and fast to use. Feels more straightforward.
• I've found the moodle platform easy to use.
• After learning Moodle, I like it and find it easier to use. The students like it because they can find all the assignments easily.
• Note, we are not using moodle; we are using joule (a.k.a. Moodlerooms). I am using mr in four classes, three of which are entirely online and one of which is face-to-face. I have attended a number of training sessions in mr and participated in a pilot study at the end of the fall 2010 semester.
• Great from a faculty point of uploading and creating space. Love the option of Topics/Modules or Weeks to choose from when creating layout. Gradebook is more complicated at first glance and setting up defaults is tricky.
For Faculty Survey II Question Seven, regarding the experiences and perspectives about the current Moodle supported by Moodlerooms, with four respondents, there is a total of four responses.

**Faculty Survey II Question Ten:** If Moodle supported by Moodlerooms is selected to be a new Course Management System (CMS), are you less or more willing to make a transition?

![Bar chart showing the responses to Faculty Survey II Q10: Less or More Willing to Make a Transition to the New CMS, Moodle Supported by Moodlerooms.](image)

Figure 7: If Moodle supported by Moodlerooms is selected to be a new Course Management System (CMS), are you less or more willing to make a transition?

For Faculty Survey II Question Ten, regarding the willingness to make a transition to Moodle supported by Moodlerooms if selected, with four respondents, there is a total of four responses.
DISCUSSIONS OF RESEARCH QUESTION THREE:

What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online students at Morehead State University in Spring 2011 semester?

The student survey questions four, five and six in combined and eight are responding to this research question Three. They are as follows:

**Student Survey Question Four:** Comparing Moodle supported by Moodlerooms to Blackboard (Part I)

![Student Survey Q4: Comparing Moodle to Blackboard (Part I)](image)

Figure 8: Comparing Moodle supported by Moodlerooms to Blackboard (Part I)
Survey Question Four, regarding comparing Moodle supported by Moodlerooms to Blackboard (Part I), includes the Reliability and Stability when Accessing the Course, Moodle is relatively easy to learn, Ease of Navigation, Moodle’s interface is consistent, Flexibility and Organization, Assignments, Submitting and Tracking Assignments, Tracks require an appropriate number of mouse clicks, and the user interface for students is intuitive sub questions. With eighty-nine respondents for each of the nine sub questions, there are a total of eight hundred one responses.

Most respondents reported Moodle supported by Moodlerooms is better than Blackboard on the following sub questions Moodle is relatively easy to learn, Ease of Navigation, Moodle’s interface is consistent, Flexibility and Organization, Assignments, Submitting and Tracking Assignments, , and the user interface for students is intuitive. However, for sub question regarding the Reliability and Stability when Accessing the Course and Tracks require an appropriate number of mouse clicks, most respondents reported that Moodle supported by Moodlerooms is about the same as Blackboard. Most respondents did not report that Moodle supported by Moodlerooms is worse than Blackboard.

*Student Survey Question Five: Comparing Moodle supported by Moodlerooms to Blackboard (Part II)*
Figure 9: Comparing Moodle supported by Moodlerooms to Blackboard (Part II)

Survey Question Five, regarding comparing Moodle supported by Moodlerooms to Blackboard (Part II), includes the following sub questions Moodle is compatible across different platforms, Quizzes/Feedback, and Grades, Assignment Submission, Gradebook, Hyperlinks, Assessments, The built-in online help feature provides the necessary support, Calendar, Syllabus, and Announcements. With eighty-nine respondents for each of the ten sub questions, there is a total of eight hundred ninety responses.

Most respondents reported Moodle supported by Moodlerooms is better than Blackboard on the following sub questions Quizzes, Feedback, and Grades, Assignment Submission, Gradebook, and Calendar. However, for the following sub questions Moodle is compatible across different platforms, Hyperlinks, Assessments,
The built-in online help feature provides the necessary support, Syllabus, and Announcements, most respondents reported that Moodle supported by Moodlerooms is about the same as Blackboard. Most respondents did not report that Moodle supported by Moodlerooms is worse than Blackboard.

**Student Survey Question Six:** Comparing Moodle supported by Moodlerooms to Blackboard (Part II)

![Figure 10: Comparing Moodle supported by Moodlerooms to Blackboard (Part II)](image)

Survey Question Six, regarding comparing Moodle supported by Moodlerooms to Blackboard (Part III), includes the following sub questions: Discussions, Learning Modules, Contributing to Discussions, Communication with Faculty or Peers, Group Participation, Communication with Classmates, Roster, Communication with Instructor, Chat, and Mail. With eighty-nine respondents for each of the ten sub questions, there is a total of eight hundred ninety responses.
Most respondents reported Moodle supported by Moodlerooms is about the same as Blackboard on most all of the sub questions: the Discussions, Learning Modules, Contributing to Discussions, Communication with Faculty or Peers, Group Participation, Communication with Classmates, Roster, Communication with Instructor, Chat, and Mail, except the Learning Modules sub question. For the Learning Modules sub question, most respondents reported that Moodle supported by Moodlerooms is better than Blackboard. Most respondents did not report that Moodle supported by Moodlerooms is worse than Blackboard.

Using combined data from the student survey questions four, five, and six, the findings demonstrated the overall evaluation by explicitly comparing all features in various areas between Moodle supported by Moodlerooms and Blackboard.

![Totals of Q4, Q5, and Q6](chart.png)

Figure 11: Combined student survey Q4, Q5, and Q6

The above figure is regarding the comparison between Moodle supported by Moodlerooms and Blackboard, which includes all sub questions of the student survey questions four, five, and six. With eighty-nine respondents for each of the twenty-nine sub questions, there is a total of two thousand five hundred eighty-one responses.
For the overall responses, one thousand sixty-two responses or forty-one percent responded that Moodle supported by Moodlerooms is better than Blackboard, one thousand one hundred forty-one responses or forty-four percent responded that Moodle supported by Moodlerooms is about the same as Blackboard, and three hundred seventy-eight responses or fifteen percent responded that Moodle supported by Moodlerooms is worse than Blackboard. In conclusion, after combining the findings of these three survey questions, eighty-five percent of all the responses were that Moodle supported by Moodlerooms is either better than Blackboard or about the same as Blackboard.

In supporting Research Question Three, using the students’ perceptions that were collected in the Student Survey as categorical, nonparametric data to approximate a statistical test, the data were evaluated with a chi-square test. Student Survey questions and sub questions Q4, Q5, and Q6 were regarding Moodle supported by Moodlerooms compared to Blackboard. Eighty-nine valid student respondents answered the twenty-nine sub questions giving two thousand eighty-one descriptive elements to compare the advantages and challenges of Moodle supported by Moodlerooms compare to Blackboard. The Microsoft Excel 2007 table below used the CHITEST function and shows that the variation in answers to Student Survey questions and sub questions Q4, Q5, and Q6 are in favor of Moodle supported by Moodlerooms by a statistically acceptable margin; that is, if this were a quantitative analysis with a standardized statistical test using a level of acceptance of 0.05 and the result in the table below being one tail of a two-tail test, the null hypothesis, $H_0$, would be rejected and the alternate hypothesis, $H_a$, would be accepted supporting that there is a statistical difference in advantages and challenges for Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms based on participating students perception as used at Morehead State University in Spring 2011.
Chi Square: Comparing Moodle supported by Moodlerooms to Blackboard (Q4, Q5, and Q6)

<table>
<thead>
<tr>
<th>Moodie Supported by Moodlerooms (Actual)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1062</td>
<td>Agree</td>
</tr>
<tr>
<td>1141</td>
<td>Neutral</td>
</tr>
<tr>
<td>378</td>
<td>Disagree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moodie Supported by Moodlerooms (Expected)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>860</td>
<td>Agree</td>
</tr>
<tr>
<td>861</td>
<td>Neutral</td>
</tr>
<tr>
<td>860</td>
<td>Disagree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formula (ChiTest)</th>
<th>Description (Result)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.016971998</td>
<td>The $\chi^2$ statistic for the data above</td>
</tr>
</tbody>
</table>

Table 2: Chi Square
**Student Survey Question Eight:** Does Moodle supported by Moodlerooms require more training than our current Blackboard (7.3)?

![Bar chart showing the percentage of respondents who agree or disagree with the statement.](chart.png)

Figure 12: Does Moodle supported by Moodlerooms require more training than our current Blackboard (7.3)?

For Survey Question Eight, regarding the requirement for training, with eighty-nine respondents, there is a total of eighty-nine responses. For the overall responses, twenty-eight respondents or thirty-one percent of all respondents responded to Agree that Moodle supported by Moodlerooms require more training than Blackboard, whereas sixty-one respondents or sixty-nine percent of all respondents responded to Disagree.

**DISCUSSIONS OF RESEARCH QUESTION FOUR:**

What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online faculty at Morehead State University in Spring 2011 semester?
The survey questions one to nine from the first faculty survey, the *Faculty Evaluation of Blackboard and Moodle Spring 2011* (subtitle: Blackboard and Moodle Performance Evaluation), and the survey questions four, six and eight from the second survey, the *Spring 2011 Course Information and Faculty Experience and Perspectives of Blackboard and Moodle*, are responding to research question four. They are as follows:

The *Faculty Evaluation of Blackboard and Moodle Spring 2011* (subtitle: Blackboard and Moodle Performance Evaluation)

**Faculty Survey I Question One: Rate the Assessment and Grading Tools**

![Rate the Assessment and Grading Tools](image)

Figure 13: Rate the Assessment and Grading Tools
For Faculty Survey I Question One, regarding the Assessment and Grading Tools area, which includes Gradebook, Syllabus, Assignments, Assessments/Quizzes, and Grade Tools features, with five respondents for each of the five sub questions, there is a total of twenty-five responses. For the overall responses, eight responded to prefer Blackboard, four responded to neutral, and thirteen responded to prefer Moodle supported by Moodlerooms. The five respondents favored Moodle supported by Moodlerooms for the sub questions Syllabus, Assignments, and Assessments/Quizzes, whereas they favored Blackboard for sub question Gradebook. For sub question regarding Grade Tools, there was no demonstrated preference between Blackboard and Moodle supported by Moodlerooms.

**Faculty Survey I Question Two: Rate the Communication Tools**

![Facility Survey I Q2: Rate the Communication Tools](image)

Figure 14: Rate the Communication Tools
For Faculty Survey I Question Two, regarding the Communication Tools area, which includes Mail, Groups, Announcements, Discussions, Whiteboard, Web Links, and Calendar features, with five respondents for each of the seven sub questions, there is a total of thirty-five responses. For the overall responses, five responded to prefer Blackboard, six responded to neutral, seventeen responded to prefer Moodle supported by Moodlerooms, and seven responded to did not use. The five respondents favored Moodle supported by Moodlerooms for the sub questions Mail, Groups, Announcement, Web Links, and Calendar, whereas, they favored Blackboard for sub question Discussions. For sub question Whiteboard, there was no demonstrated preference between Blackboard and Moodle supported by Moodlerooms because all respondents did not use this feature.

**Faculty Survey I Question Three: Rate the Organization Tools**

![Faculty Survey I Q3: Rate the Organization Tools](image-url)

Figure 15: Rate the Organization Tools
For Faculty Survey I Question Three, regarding the Organization Tools area, which includes Units/Topics/Modules, Roster/Participants List, and Tracking and Reports features, with five respondents for each of the three sub questions, there is a total of fifteen responses. For the overall responses, three responded to prefer Blackboard, three responded to neutral, and nine responded to prefer Moodle supported by Moodlerooms. The five respondents favored Moodle supported by Moodlerooms for the sub questions Units/Topics/Modules and Roster/Participants List. None of the respondents favored Blackboard for any sub question. For sub question Tracking and Reports, there was no demonstrated preference between Blackboard and Moodle supported by Moodlerooms.

**Faculty Survey I Question Four: Rate the Available Abilities**

![Bar chart showing preferences for TA role, Instructor/Designer role, and Faculty's Demo role.]

Figure 16: Rate the Available Abilities

For Faculty Survey I Question Four, regarding the Available Abilities area, which includes TA Role, Instructor/Designer Role, and Faculty's Demo Role features, with five respondents for each of the three sub questions, there is a total of
fifteen responses. For the overall responses, none responded to prefer Blackboard, two responded to neutral, five responded to prefer Moodle supported by Moodlerooms, and eight responded to did not use. The five respondents favored Moodle supported by Moodlerooms for the sub questions Instructor/Designer Role and Faculty’s Demo Role. None of the respondents favored Blackboard for any sub question. For sub question TA Role, there was no demonstrated preference between Blackboard and Moodle supported by Moodlerooms because four respondents did not use this feature and one reported neutral.

**Faculty Survey I Question Five: Rate the Interface**

![Faculty Survey I Q5: Rate the Interface](image-url)

Figure 17: Rate the Interface

For Faculty Survey I Question Five, regarding the Interface area, which includes Intuitiveness, Consistency, Simplicity, Ability to Customize, Ability to Organize, and 508 Compliance features, with five respondents for each of the six sub
questions, there is a total of thirty responses. For the overall responses, seven responded to prefer Blackboard, one responded to neutral, nineteen responded to prefer Moodle supported by Moodlerooms, and three responded to did not use. The five respondents favored Moodle supported by Moodlerooms for the sub questions Intuitiveness, Consistency, Simplicity, Ability to Organize, and 508 Compliance; whereas, they favored Blackboard for sub question Ability to Customize.

**Faculty Survey I Question Six: Rate the Ease of Use**

![Figure 18: Rate the Ease of Use](image)

For Faculty Survey I Question Six, regarding the Ease of Use area, which includes Content Creation, Content/File Management, Quiz/Assessment Creation, Course Management, Overall Course Design, Ease of Training, Usefulness of Help Feature, and Ease of Initial Configuration features, with five respondents for each of
the eight sub questions, except the Usefulness of Help Feature sub question that had four responses, there is a total of thirty-nine responses. For the overall responses, eight responded to prefer Blackboard, six responded to neutral, and twenty-five responded to prefer Moodle supported by Moodlerooms. The five respondents favored Moodle supported by Moodlerooms for all of the sub questions.

Faculty Survey I Question Seven: Rate the Migrate and Import Tools

![Rate the Migrate and Import Tools](image)

Figure 19: Rate the Migrate and Import Tools

For Faculty Survey I Question Seven, regarding the Migrate and Import Tools area, which includes Accessibility of Tools, Migrate between Sections, Migrate between Products, Import Learning Objects, and Backup and Save Courses features, with five respondents for each of the five sub questions, there is a total of twenty-five responses. For the overall responses, two responded to prefer Blackboard, three
responded to neutral, ten responded to prefer Moodle supported by Moodlerooms, and ten responded to did not use. The five respondents favored Moodle supported by Moodlerooms for all of the sub questions.

**Faculty Survey I Question Eight: Rate the Compatibility**

![Faculty Survey I Q8: Rate the Compatibility](image)

Figure 20: Rate the Compatibility

For Faculty Survey I Question Eight, regarding the Compatibility area, which includes Browser Compatibility, Cross-Platform Compatibility, and JAVA Compatibility features, with five respondents for each of the three sub questions, there is a total of fifteen responses. For the overall responses, two responded to prefer Blackboard, two responded to neutral, five responded to prefer Moodle supported by Moodlerooms, and six responded to did not use. The five respondents favored Moodle supported by Moodlerooms for the sub questions Browser Compatibility and Cross-Platform Compatibility. None of the respondents favored
Blackboard for any sub question. For sub question JAVA Compatibility, there was no demonstrated preference between Blackboard and Moodle supported by Moodlerooms.

**Faculty Survey I Question Nine: Rate the Reliability**

![Faculty Survey I Q9: Rate the Reliability](image)

Figure 21: Rate the Reliability

For Faculty Survey I Question Nine, regarding the Reliability area, which includes Consistency of User Experience, Reliability of User Experience, and Frequency of System Errors features, with five respondents for each of the three sub questions, there is a total of fifteen responses. For the overall responses, three responded to prefer Blackboard, two responded to neutral, and ten responded to prefer Moodle supported by Moodlerooms. The five respondents favored Moodle supported by Moodlerooms for all of the sub questions.
Faculty Survey II Question Four: This new system, Moodle supported by Moodlerooms, requires more training than our current system, Blackboard.

Figure 22: This new system, Moodle supported by Moodlerooms, requires more training than our current system, Blackboard.

Collected Responses/Comments:

- It is mostly self explanatory.
- Moodle is different at first, but seems easier once you figure it out.
• more training on where things are and the gradebook activity is needed

For Faculty Survey II Question Four, regarding the new system, Moodle supported by Moodlerooms, requires more training than our current system, Blackboard, with four respondents, there is a total of four responses. For the overall responses, two responded to Somewhat Agree, one responded to Strongly Disagree, and one responded to Somewhat Disagree. There was no demonstrated differences of agree or disagree between Blackboard and Moodle supported by Moodlerooms.

Faculty Survey II Question Six: What are pros and cons of Blackboard?

Collected Responses/Comments:

• Pros - many people are accustomed to it and have material they recycle each semester. Cons - slow and cumbersome.
• Blackboard is more compartmentalized than moodle.
• Blackboard has a nice layout, but the grading is very time consuming with all the clicks.
• Bb is a straightforward shell which does not enforce a prepackaged pedagogy. It is flexible. Bb requires many "click throughs" to accomplish many tasks.
• pros - familiar with it, somewhat easy navigation, gradebook very easy to use cons - repetitive or redundant OK buttons constantly, very slow to upload, course navigation can get complicated with building several folders inside of folders

For Faculty Survey II Question Six, regarding the pros and cons of Blackboard, with four respondents, there is a total of four responses. For the overall responses, most common comments are about being time consuming for completing
a task and redundancy as the con of Blackboard. However, there are comments about its simplicity and friendly layout/design as the pro of Blackboard.

**Faculty Survey II Question Eight: What are pros and cons of Moodle supported by Moodlerooms?**

Collected Responses/Comments:

- Pros - faster and easier Cons - a new system to learn
- I like the way moodle has segmented categories as it relates to student information, campus news and events, and the interactive calendar.
- Moodle gets cluttered on the front page and is very long by the time you get late into the semester. The grading is awesome and easy to use. The import feature is wonderful when you need assignments that have been prepared in another section.
- mr is designed for K-12 applications. The trainers from the company made that very clear. It does not allow for the level of customization. College professors are accustomed to having in the pedagogical materials they use. I do not see any positives to mr for college classes.
- Pros - ease of use and navigation. Creating topics or weeks format and the highlighted section for the student. Cons - can't change the start date of the course (for example...this semester started on a Tuesday....every cycle of the Moodle happens on a Tuesday....that can't be changed) Gradebook needs training to understand.

For Faculty Survey Question Eight, regarding the pros and cons of Moodle supported by Moodlerooms, with four respondents, there is a total of four responses. For the overall responses, the most common comments are about layout/design, ease
of use, and course organization as the pro of Moodle supported by Moodlerooms.
However, there are comments about its inflexibility of customization of some features as the con of Moodle supported by Moodlerooms.
Chapter V: Conclusions and Implications

Conclusions

This descriptive study examined the advantages and challenges of Course Management Systems, such as Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms, as used by faculty and students at Morehead State University in Spring 2011 semester. The results of the analysis of the qualitative data from the surveys of this study indicate the trends noted as follows.

Data from all three surveys were reviewed to realize any errors in any part of the data collection process. In fact, one faculty member supplied one faculty survey to one student; therefore, that student respondent data were filtered from further processing. As well, the student survey revealed that three of the ninety-two student respondents may not have had both Blackboard and Moodle supported by Moodlerooms experience, so all data for those three student respondents were filtered from further processing. For this study, there were eighty-nine valid student respondents.

This study analysis describes that the average student evaluation of advantages and challenges of Moodle supported by Moodlerooms compare to Blackboard shows consistently higher ratings for Moodle supported by Moodlerooms. Within the small sample size of faculty, the average faculty evaluation of advantages and challenges of Moodle supported by Moodlerooms compared to Blackboard showed that overall faculty preferred almost all of the features used in Moodle supported by Moodlerooms over those in Blackboard, except the Gradebook, Discussions, and Ability to Customize.

Although the nonparametric data do not support a quantitative statistical analysis and testing to formally accept or reject a hypothesis, a sample hypothesis was developed and tested with approximated statistical methods because of the reasonable
sample size of the valid student respondents. The results of the hypothesis testing of the related research question (i.e., there are no advantages and challenges between Course Management Systems, such Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms, as used by students at Morehead State University in Spring 2011) would indicate the null hypothesis being rejected.

Four research questions were generated to guide this descriptive study. The research questions were:

1. What are online students' overall evaluation and satisfaction of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?
2. What are online faculty's overall evaluation and preference of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems at Morehead State University in Spring 2011 semester?
3. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online students at Morehead State University in Spring 2011 semester?
4. What are the advantages and challenges of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems based on survey results of online faculty at Morehead State University in Spring 2011 semester?

Each research question in this descriptive study resulted in the conclusions that follow.
Research Question One

Research question one sought to address those attributes of Blackboard and Moodle supported by Moodlerooms Course Management Systems which concern online students and to assess online students' evaluation and satisfaction of those attributes for both Course Management Systems as used at Morehead State University. To support the assessment of this research question, Student Survey questions Q2, Q3, and Q10 addressed attributes of Course Management Systems that are of concern to online students.

Most participating students prefer Moodle supported by Moodlerooms over Blackboard. A difference of twenty-three respondents favored Moodle supported by Moodlerooms over Blackboard, that is almost two-third of the respondents preferred to use Moodle supported by Moodlerooms over Blackboard for their future courses.

The vast majority of the eighty-nine respondents agreed with the sub questions, which are: Moodlerooms is easy to use, Moodlerooms is flexible, Moodlerooms helps me reach my goals, and Moodlerooms fits my learning style; whereas, they disagreed with the sub question Moodlerooms is more difficult to learn on my own than Blackboard.

For the overall students' perceptions and/or satisfaction for the Blackboard, fifty-one reported satisfied, nine reported unsatisfied, and twenty-nine reported neutral. For Moodle supported by Moodlerooms, fifty-seven reported satisfied, fourteen reported unsatisfied, and eighteen reported neutral.

Research Question Two

Research question two sought to address those attributes of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management
Systems which concern faculty teaching online and to assess online faculty’s
evaluation and satisfaction of those attributes for both Course Management Systems
as used at Morehead State University. To support the assessment of this research
question, Faculty Survey I question Q10 along with Faculty Survey II questions Q5,
Q7, and Q10 addressed attributes of Course Management Systems that are of concern
to faculty teaching online.

From the survey I, four faculty or eighty percent of the five faculty responded
that they preferred Moodle supported by Moodlerooms over Blackboard. From the
survey II, furthermore, three faculty or seventy-five percent of the four faculty
responded that they would rather migrate to the new system, Moodle supported by
Moodlerooms, than migrate to the new version of Blackboard and also more willing to
make a transition if Moodle supported by Moodlerooms is selected to be a new
Course Management System (CMS). In summary, most participating faculty overall
preferred Moodle supported by Moodlerooms over Blackboard and are more willing
to make the transition to Moodle supported by Moodlerooms, even though it is a
newer Course Management System, than to a new version of Blackboard.

For the overall responses, the majority of participating faculty prefer Moodle
supported by Moodlerooms over Blackboard. Their most common comment for
Blackboard is about being time consuming for completing a task as the challenge.
However, there is a comment about its simplicity as the advantage of Blackboard.
For Moodle supported by Moodlerooms, the most common comment is about easy to
use as the advantage. However, there is no comment demonstrated about the
challenge of Moodle supported by Moodlerooms.

For the overall responses, three responded to Migrate to the new system,
Moodle supported by Moodlerooms and More Willing to migrate to Moodle
supported by Moodlerooms; whereas, one responded to Migrate to the new version of
Blackboard and Less Willing to migrate to the new system, Moodle supported by Moodlerooms.

Research Question Three

Research question three sought to address those attributes of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems which concern online students and to assess online students’ perception of the advantages and challenges of Course Management Systems as used at Morehead State University. To support the investigation of this research question, Student Survey questions and sub questions Q4, Q5, Q6, and Q8 addressed attributes of Course Management Systems that are of concern to online students in Spring 2011 at Morehead State University who had experience with both Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms.

Using combined data from the student survey questions four, five, and six, the findings demonstrated the overall evaluation by explicitly comparing all features in various areas between Moodle supported by Moodlerooms and Blackboard. For the overall responses, one thousand sixty-two responses or forty-one percent responded that Moodle supported by Moodlerooms is better than Blackboard, one thousand one hundred forty-one responses or forty-four percent responded that Moodle supported by Moodlerooms is about the same as Blackboard, and three hundred seventy-eight responses or fifteen percent responded that Moodle supported by Moodlerooms is worse than Blackboard. In conclusion, after combining the findings of these three survey questions, eighty-five percent of all the responses were that Moodle supported by Moodlerooms is either better than Blackboard or about the same as Blackboard. Furthermore, almost two-thirds of responses disagreed that Moodle supported by Moodlerooms requires more training than the Blackboard (7.3) that is currently used at Morehead State University.
A Chi-Square statistical analysis was performed on the categorical, nonparametric data to support the conclusion regarding Research Question 3. Eighty-nine valid student respondents answered the twenty-nine sub questions giving two thousand eighty-one descriptive elements to compare the advantages and challenges of Moodle supported by Moodlerooms compared to Blackboard. The students’ perceptions collected in answers to Student Survey questions and sub questions Q4, Q5, and Q6 rank Moodle supported by Moodlerooms over Blackboard by a statistically acceptable margin; that is, the alternate hypothesis, $H_a$, would be accepted supporting that there is a statistical difference in advantages and challenges for Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms based on participating students perception as used at Morehead State University in Spring 2011.

**Research Question Four**

Research question four sought to address those attributes of Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms Course Management Systems which concern faculty who teach online and to assess online faculty’s perception of the advantages and challenges of Course Management Systems as used at Morehead State University. To support the investigation of this research question, Faculty Survey I questions and sub questions Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, and Q9 along with Faculty Survey II questions and sub questions Q4, Q6, and Q8 addressed attributes of Course Management Systems that are of concern to faculty who teach online during and prior to Spring 2011 semester at Morehead State University and who had experience with both Blackboard version 7.3 and Moodle version 1.9 supported by Moodlerooms.

According to the faculty’s evaluation of tools and features in different areas in Moodle supported by Moodlerooms and Blackboard, the majority of faculty
responded that overall they prefer Moodle supported by Moodlerooms over Blackboard in all of the areas, except Gradebook, Discussions, and Ability to Customize.

The faculty were asked about Grade Tools, Whiteboard (did not use), Tracking and Reports, TA Role (did not use), and Java Compatibility sub questions, but there was no demonstrated preference between Blackboard and Moodle supported by Moodlerooms. The faculty reported that they did not use the Whiteboard and the TA Role features.

All respondents reported that they favored Moodle supported by Moodlerooms over Blackboard for all sub questions in the following areas: Ease of Use, Migrate and Import Tools, and Reliability. In contrast, none of the respondents reported that they favored Blackboard over Moodle supported by Moodlerooms for any sub question in the following areas: Organization Tools, Available Abilities, and Compatibility.

There was no demonstrated preference of agree or disagree between Blackboard and Moodle supported by Moodlerooms system once the faculty were asked if the new system, Moodle supported by Moodlerooms, requires more training than the Blackboard that is currently used at Morehead State University.

For Blackboard, most selected participating faculty commented about it being time consuming for completing a task and redundancy issues as the con; whereas, its simplicity and friendly layout/design as the pro. For Moodle supported by Moodlerooms, most selected participating faculty commented about its inflexibility of customization of some features as the con; whereas, its layout/design, ease of use, and course organization as the pro.
**In Summary**

Participating students overwhelmingly prefer the Moodle supported by Moodlerooms CMS to the Blackboard CMS, although almost all of them had Blackboard experience prior to the study and very few participating students had Moodle supported by Moodlerooms experience prior to the study. Additionally, the selected faculty group had a preference for the Moodle supported by Moodlerooms CMS instead of the Blackboard CMS in most features, although all faculty in general had more Blackboard than Moodle supported by Moodlerooms experience prior to this study.

In this research, the majority of the selected participating students and faculty at Morehead State University prefer Moodle version 1.9 supported by Moodlerooms over Blackboard version 7.3 (which is not the most recent version of either application).

**Future Research and Recommendations**

Due to the small sample size and the narrow scope of the study, this study should not be considered scientific nor the correlations found in the data collected statistically significant; however, these findings do serve as both evidence that further research is necessary and as guidance for developing that research. Further studies are needed to compare the most recent version of Moodle supported by Moodlerooms with the most recent version Blackboard. An ongoing review and investigation of Course Management Systems should be considered as Morehead State University strives for continuous improvement in online course delivery.
References


Feeney, D. R. (2001). RATES OF ADOPTION IN A UNIVERSITY COURSE MANAGEMENT SYSTEM. Doctor of Education in Educational Psychology, West Virginia University, Morgantown, West Virginia.


Twigg, C. (2003). Improving Learning and Reducing Costs: Lesson Learned from Round One of the Pew Grant Program in Course Redesign. EDUCAUSE 2. 79.


University, M. S. (2010). Faculty Senate Minutes: October 21, 2010

Morehead State University.

Appendix A: Students and Faculty Surveys
For each question, please select one of the best answers that represent your perspectives, satisfaction, and experiences about Moodle and Blackboard. Please select "Done" button at the bottom of the page to submit your completed responses.

1. What is your academic standing?
   - Freshman
   - Sophomore
   - Junior
   - Senior
   - Graduate Student

2. If you were given the option to take courses using either Moodle or current Blackboard (9.X), which would you choose?
   - Moodle
   - Blackboard Vista

3. Regarding the Moodle Course Management System

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Somewhat Agree</th>
<th>Somewhat Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodle is easy to use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle is flexible</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle helps me reach my goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle fits my learning style.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle is more difficult to learn on my own than Blackboard was.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Comparing Moodle to Blackboard (Part 1)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Better than Blackboard</th>
<th>About the same as Blackboard</th>
<th>Worse than Blackboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability and Stability when Assessing the Course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle is relatively easy to learn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Navigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle's interface is consistent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility and Organization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submitting and Tracking Assignments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasks require an appropriate number of mouse clicks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The user interface for students is intuitive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Comparing Moodle to Blackboard (Part 2)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Better than Blackboard</th>
<th>About the same as Blackboard</th>
<th>Worse than Blackboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodle is compatible across different platforms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quizzes, Feedback, and Grades</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignment Submission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gradebook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperlinks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The built-in online help feature provides the necessary support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syllabus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Announcements</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 6. Comparing Moodle to Blackboard (Part 3)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Better than Blackboard</th>
<th>About the same as Blackboard</th>
<th>Worse than Blackboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning Modules</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributing to Discussions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication with Faculty or Peers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Participation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicating with Classmates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roster</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicating with Instructor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mail</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7. Number of Blackboard and Moodle courses

<table>
<thead>
<tr>
<th>How many of your courses use Blackboard?</th>
<th>One</th>
<th>Two</th>
<th>Three</th>
<th>Four</th>
<th>Five +</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many of your courses use Moodle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 8. Does Moodle require more training than our current Blackboard (9.x)?

- Agree
- Disagree

Comments (please specify)
**9. Prior experiences with Blackboard and Moodle**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have taken a class using Blackboard prior to this class.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have taken a class using Moodle prior to this class.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**10. Overall perceptions and/or satisfaction about Blackboard and/or Moodle**

<table>
<thead>
<tr>
<th></th>
<th>Satisfied</th>
<th>Unsatisfied</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments (please specify)

```

```

 Powered by SurveyMonkey
Create your own free online survey now!
For each question, please select one of the best answers that represent your perspectives, satisfaction, and experiences about Moodle and Blackboard. Please select "Done" button at the bottom of the page to submit your completed responses.

**1. Rate the Assessment and Grading Tools**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Strongly prefer Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly prefer Moodle</th>
<th>Strongly prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradebook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syllabus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessments/Quizzes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade Tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2. Rate the Communication Tools**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Strongly prefer Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly Prefer Moodle</th>
<th>Strongly Prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Announcements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whiteboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web Links</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**3. Rate the Organization Tools**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Strongly prefer Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly Prefer Moodle</th>
<th>Strongly Prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units/Topics/Modules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roster/Participants List</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tracking and Reports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4. Rate the Available Abilities**

<table>
<thead>
<tr>
<th>Role</th>
<th>Strongly prefer Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly Prefer Moodle</th>
<th>Strongly Prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA Role</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructor/Designer Role</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty’s Demo Role</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Rate the Interface

<table>
<thead>
<tr>
<th>Feature</th>
<th>Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly Prefer Moodle</th>
<th>Strongly Prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intuitiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to Customize</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to Organize</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>508 Compliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Rate the Ease of Use

<table>
<thead>
<tr>
<th>Feature</th>
<th>Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly Prefer Moodle</th>
<th>Strongly Prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Creation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content/File Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quiz/Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Course Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usefulness of Help</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Initial Configuration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Rate the Migrate and Import Tools

<table>
<thead>
<tr>
<th>Feature</th>
<th>Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly Prefer Moodle</th>
<th>Strongly Prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility of Tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Migrate between Sections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Migrate between Products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import Learning Objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backup and Save</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Rate the Compatibility

<table>
<thead>
<tr>
<th>Feature</th>
<th>Blackboard</th>
<th>Slightly prefer Blackboard</th>
<th>Neutral</th>
<th>Slightly Prefer Moodle</th>
<th>Strongly Prefer Moodle</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browser Compatibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-Platform Compatibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JAVA Compatibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. Rate the Reliability

<table>
<thead>
<tr>
<th></th>
<th>Strongly prefer</th>
<th>Slightly prefer</th>
<th>Neutral</th>
<th>Slightly Prefer Moodie</th>
<th>Strongly Prefer Moodie</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency of User</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliability of User</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of System Errors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Rate the Overall Preference

<table>
<thead>
<tr>
<th></th>
<th>Strongly prefer</th>
<th>Slightly prefer Blackboard</th>
<th>Slightly Prefer Moodie</th>
<th>Strongly Prefer Moodie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodie versus Blackboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blackboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments (please specify)

- 

Done

Powered by SurveyMonkey
Create your own free online survey now!
1. Spring 2011 Course Information and Faculty Experience and Perspectives of Blackboard and Moodle

For each question, please select one of the best answers that represent your perspectives, satisfaction, and experiences about Moodle and Blackboard. Please select "Done" button at the bottom of the page to submit your completed responses. Thank you for your participation.

1. How many online courses you are currently teaching?
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5+

2. Please list the Course Number(s) and Title(s) that you are currently teaching. How many students are in each course?

3. Number of Semesters

<table>
<thead>
<tr>
<th>For how many courses have you posted the Student Survey?</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many semesters of experience you have had with Blackboard as an instructor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many semesters of experience you have had with Moodle as an instructor?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many semesters of experience you have had with Blackboard as a student?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many semesters of experience you have had with Moodle as a student?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. This new system, Moodle, requires more training than our current system, Blackboard. Comments:
- Strongly Agree
- Somewhat Agree
- Strongly Disagree
- Somewhat Disagree

Comments (please specify)

5. Please describe your experiences and perspectives about the current Blackboard.

6. What are pros and cons of Blackboard?

7. Please describe your experiences and perspectives about the current Moodle.

8. What are pros and cons of Moodle?
9. Would you rather the university migrate to the new version of Blackboard or migrate to the new system, Moodle?
   - Migrate to the new version of Blackboard
   - Migrate to the new system, Moodle

Comments (please specify)

---

10. If Moodle is selected to be a new Course Management System (CMS), are you less or more willing to make a transition?
   - Less Willing
   - More Willing

---

*Powered by SurveyMonkey
Create your own free online survey now!*
Appendix B: Tables
Q3: Regarding the Moodle supported by Moodlerooms Course Management System

<table>
<thead>
<tr>
<th>Moodle is easy to use.</th>
<th>Moodle is flexible.</th>
<th>Moodle helps me reach my goals.</th>
<th>Moodle fits my learning style.</th>
<th>Moodlerooms is more difficult to learn on my own than Blackboard was.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Disagree</td>
<td>Agree</td>
</tr>
<tr>
<td>77</td>
<td>12</td>
<td>78</td>
<td>11</td>
<td>73</td>
</tr>
<tr>
<td>87%</td>
<td>13%</td>
<td>88%</td>
<td>12%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Table 1: Student Survey Question Two: If you were given the option to take courses using either Moodle supported by Moodlerooms or current Blackboard (7.3), which would you choose?
Chi Square: Comparing Moodle supported by Moodlerooms to Blackboard (Q4, Q5, and Q6)

<table>
<thead>
<tr>
<th>Description</th>
<th>Moodle supported by Moodlerooms (Actual)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>1062</td>
</tr>
<tr>
<td>Neutral</td>
<td>1141</td>
</tr>
<tr>
<td>Disagree</td>
<td>378</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Moodle supported by Moodlerooms (Expected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>860</td>
</tr>
<tr>
<td>Neutral</td>
<td>861</td>
</tr>
<tr>
<td>Disagree</td>
<td>860</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Formula (ChiTest) (Result)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The $\chi^2$ statistic</td>
<td>0.016971998</td>
</tr>
</tbody>
</table>

Table 2: Chi Square
Appendix C: Figures
Q1: Academic Standing

![Bar chart showing academic standing by year.](image)

Figure 1: Survey Question Two: What is your academic standing?

Q2: Preference of Moodle Supported by Moodlerooms or Blackboard for future courses

![Bar chart showing preference for future courses.](image)

Figure 2: Student Survey Question Two: If you were given the option to take courses using either Moodle supported by Moodlerooms or current Blackboard (7.3), which would you choose?
Figure 3: Student Survey Question Three: Regarding the Moodle supported by Moodlerooms Course Management System
Q3: Regarding the Moodle Supported by Moodlerooms Course Management System (Agree vs. Disagree)

- Moodle is easy to use.
- Moodle is flexible.
- Moodle helps me reach my goals.
- Moodle fits my learning style.
- Moodle is more difficult to learn on my own than Blackboard was.

Figure 4: Student Survey Question Three: Regarding the Moodle supported by Moodlerooms Course Management System (Agree vs. Disagree)

Q10: Satisfaction about Blackboard and/or Moodle Supported by Moodlerooms

- Satisfied about Blackboard: 57%
- Unsatisfied about Blackboard: 10%
- Neutral about Blackboard: 33%
- Satisfied about Moodle supported by Moodlerooms: 64%
- Unsatisfied about Moodle supported by Moodlerooms: 16%
- Neutral about Moodle supported by Moodlerooms: 20%

Figure 5: Student Survey Question Ten: Overall perceptions and/or satisfaction about Blackboard and/or Moodle supported by Moodlerooms
Figure 6: Faculty Survey I Question Ten: Rate the Overall Preference

Figure 7: Faculty Survey II Question Ten: If Moodle supported by Moodlerooms is selected to be a new Course Management System (CMS), are you less or more willing to make a transition?
Figure 8: Student Survey Question Four: Comparing Moodle supported by Moodlerooms to Blackboard (Part 1)
Figure 9: Student Survey Question Five: Comparing Moodle supported by Moodlerooms to Blackboard (Part 2)
Figure 10: Student Survey Question Six: Comparing Moodle supported by Moodlerooms to Blackboard (Part 3)

Figure 11: Combined Student Survey Questions 4, 5, and 6: Comparing Moodle supported by Moodlerooms to Blackboard (Part I, II, and III)
Figure 12: Student Survey Question Eight: Does Moodle supported by Moodlerooms require more training than our current Blackboard (7.3)?

Figure 13: Faculty Survey I Question One: Rate the Assessment and Grading Tools
Figure 14: Faculty Survey I Question Two: Rate the Communication Tools

Figure 15: Faculty Survey I Question Three: Rate the Organization Tools
Figure 16: Faculty Survey I Question Four: Rate the Available Abilities

Figure 17: Faculty Survey I Question Five: Rate the Interface
Faculty Survey I Q6: Rate the Ease of Use

Figure 18: Faculty Survey Question Six: Rate the Ease of Use

Faculty Survey I Q7: Rate the Migrate and Import Tools

Figure 19: Faculty Survey I Question Seven: Rate the Migrate and Import Tools
Faculty Survey I Q8: Rate the Compatibility

Figure 20: Faculty Survey I Question Eight: Rate the Compatibility

Faculty Survey I Q9: Rate the Reliability

Figure 21: Faculty Survey I Question Nine: Rate the Reliability
Faculty Survey II Q4: This new system, Moodlerooms, requires more training than our current system Blackboard.

Figure 22: Faculty Survey II Question Four: This new system, Moodle supported by Moodlerooms, requires more training than our current system, Blackboard.
Appendix D: Letter Requesting Permission
February 25, 2011

University of North Carolina at Charlotte
Charlotte, NC 28223-0001

Dear Dr. Marvin Croy and Dr. Ron Smelser,

I am a graduate student in the Industrial and Technology Engineering program at Morehead State University (MSU), my adviser is Dr. Ahmad Zargari. I plan on completing my degree by the end of this semester, Spring 2011. Currently, I am working on a thesis, my proposed thesis topic is Determination of Selected Course Management Systems Advantages and Challenges.

I plan to survey the online faculty and student’s perspectives and satisfaction of Moodle supported by Moodlerooms versus Blackboard Course Management Systems. I will group them into (1) Online faculty and students with Blackboard experience and (2) Online faculty and students without Blackboard experience.

During the Review of Literature process, I came across the reports from Learning Management System Evaluation Committee. I found that some information and data will be helpful and benefits to my research. I would like to ask for your permission to use the contents from the reports and recommendations, such as
information, survey, findings, and etc. that may be helpful and associates to my thesis.

Thank you for your time and effort during this process. Your permission would be greatly appreciated. Please do not hesitate to contact me if you have any questions.

Sincerely,

Dolruedee ‘Tang’ Suppacheewa
Dear Mr. Suppacheewa,

Please feel free to use the report that is posted to the web. Just be sure to cite it appropriately in your thesis. I wish you success in completing your work.

Sincerely,

Ron Smelser

Ronald E. Smelser, PhD, PE | Professor and Associate Dean
UNC Charlotte | The William States Lee College of Engineering
310 Duke Centennial Hall
9201 University City Blvd. | Charlotte, NC 28223-0001
Phone: 704-687-8244 | Fax: 704-687-8267
rsmelser@uncc.edu | http://www.coe.uncc.edu
Appendix E: Surveys Web Links Emails
Subject: Research Survey: Determination of Selected Course Management Systems Advantages and Challenges

Dear MSU Online Faculty,

Thank you very much for your willing and participation in my research, Determination of Selected Course Management Systems Advantages and Challenges.

I would like to obtain information from you by surveying about perspectives, satisfaction, and experiences of the Course Management System(s) that you are currently using. The survey can be taken only once and is open until Thursday, 24 March 2011. After the submission, you cannot change your responses or retake the survey.

To collect your responses, I would like to ask you to take two surveys, which are (1) Blackboard and Moodle supported by Moodlerooms Performance Evaluation and (2) Overall Perceptions of Blackboard and Moodle supported by Moodlerooms. The link to the first survey is addressed below. In a few days, you will be receiving another email to allow you to access to the second survey.

By following this survey link <http://www.surveymonkey.com/s/QCR3SST> in this email, you will be accessing to the first survey - Blackboard and Moodle supported by Moodlerooms Performance Evaluation. There are ten questions and should approximately take 5-10 minutes to complete. Please let me know if you have questions or cannot access to the survey.

All responses are anonymous, securely collected, and maintained. The responses are only being used for this study. Your participation is greatly appreciated and will help me to generate the findings for my study.
Your participation, time, and effort are highly appreciated during this process.

Thank you,
Dolrudee ‘Tang’ Suppacheewa
Graduate Student, Department of Industrial Technology
Subject: Link for Student Research Survey: Bb vs Moodle supported by Moodlerooms

Dear MSU Online Faculty,

Would you please post the below cover letter and (2) survey link for the student survey on your online course(s)?

Thank you,
Dolruedee Suppacheewa

---

Dear MSU students,

I am a graduate student in the Industrial and Technology Engineering program at the Morehead State University (MSU). Currently, I am working on a thesis; my proposed thesis topic is **Determination of Selected Course Management Systems Advantages and Challenges**.

I would like to obtain information from you by surveying about your perspectives, satisfaction, and experiences of the Course Management System(s), Blackboard and/or Moodle supported by Moodlerooms that you are currently using at MSU.

The survey can be taken only once and is **open until Thursday 31, March 2011 at 11:55pm (EST)**. After the submission, you cannot change your responses or retake the survey.
By following this survey link <http://www.surveymonkey.com/s/QHDPFMJ>, you will be accessing to the Blackboard and Moodle supported by Moodlerooms Performance Evaluation survey. There are ten questions and should approximately take 5-10 minutes to complete. Please let me know if you have questions or cannot access to the survey via email dsuppacheewa@moreheadstate.edu.

Taking the survey is voluntarily, it will take approximately 4-5 minutes to complete. Your responses are anonymous, securely collected, and maintained. The responses are only being used for this study. Your instructor(s) has no access to the collected responses. If decided, you can stop taking the survey at anytime. However, I strongly encourage you to take and complete the survey. Your provided responses will be greatly appreciated and help me to generate the findings for my study.

Your participation, time, and effort are highly appreciated during this process.

Thank you,

Dolruedee ‘Tang’ Suppacheewa

Graduate Student, Department of Industrial Technology

dsuppacheewa@moreheadstate.edu
Subject: Second Faculty Research Survey: Blackboard vs. Moodle supported by Moodlerooms

Dear MSU Online Faculty,

Thank you for your time to participate on the 1st faculty survey, Faculty Evaluation of Blackboard and Moodle supported by Moodlerooms Spring 2011. As mentioned, here is the link http://www.surveymonkey.com/s/G39ZVMK to the 2nd survey, Spring 2011 Course Information and Faculty Experience and Perspectives of current Blackboard and Moodle supported by Moodlerooms. There are ten questions in the survey.

The survey will be open until this Friday, April 01, 2011 at 11:55pm EST. Please feel free to contact me if you have any questions or comments.

Sincerely,

Dolruedee 'Tang' Suppacheewa
Appendix F: IRB Application and Related Documents for Approval
REQUEST FOR EXEMPTION FROM FEDERAL REGULATIONS

In accordance with federal regulations, the IRB determines whether research protocols involving human subjects may be exempted. Even though the research may qualify as exempt from federal regulations, the committee still has a responsibility to decide whether the protocol represents ethical research.

Principal Investigator(s)/Principal Researcher(s) Information: The Principal Investigator(s) (PI) conducts and directs the study. He/she acts as the main contact person for the IRB, and carries full responsibility for the study. Principal Investigator(s)/Principal Researcher(s) must provide documentation of completed CITI training.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>E-Mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delruadee Sappacheewa</td>
<td>Graduate Student</td>
<td><a href="mailto:dsappacheewa@moreheadstate.edu">dsappacheewa@moreheadstate.edu</a></td>
<td>270-315-9883</td>
</tr>
</tbody>
</table>

Department: Industrial and Engineering Technology

Campus Address: n/a

Title of Research Project: Determination of Selected Course Management Systems Advantages and Challenges

Funding Source/Agency: (Provide name of funding source/agency and indicate if funds are internal or external. If funding will not be requested, mark N/A.)

<table>
<thead>
<tr>
<th>Name</th>
<th>Internal</th>
<th>External</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Period of Project: From: 02/24/2011 To: 04/30/2011

Co-Investigators: Co-investigators are those other than the Principal Investigator(s) who conduct, direct, and are responsible for the study. Please list the name, degree, department, telephone number, and e-mail address of each co-investigator. Co-Investigators listed here must provide documentation of completed CITI training.

n/a

Other Personnel: Other Personnel includes all team members other than the Principal Investigator(s) or Co-Investigator(s) who assist in the execution of the study, especially those who have subject contact. This may include students or graduate assistants. Please provide the names of any person who will have contact with subjects in connection with this study. Other Personnel listed here must provide documentation of completed CITI training.

n/a
For the categories of research listed below, researchers may request that the IRB exempt their protocols from federal regulations. If you believe your research protocol may be eligible for consideration as exempt from the federal regulations, consider which of the categories from the list below applies and check all that apply.

**EXEMPT CATEGORIES - 46.101(b)**

1. Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as:
   - research on regular and special education instructional strategies, or
   - research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
   - information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
   - any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

3. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if:
   - the human subjects are elected or appointed public officials or candidates for public office; or
   - Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

4. Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

5. Research and demonstration projects which are conducted by or subject to the approval of Department or Agency heads, and which are designed to study, evaluate, or otherwise examine:
   - public benefit or service programs,
   - procedures for obtaining benefits or services under those programs;
   - possible changes in or alternatives to those programs or procedures; or
   - possible changes in methods or levels of payment for benefits or services under those programs.

6. Taste and food quality evaluation and consumer acceptance studies:
   - if wholesome foods without additives are consumed; or
   - if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

The exemptions at 45 CFR 46.101 (b) do not apply to research involving prisoners, Subpart C. The exemption at 45 CFR 46.101 (b)(2), for research involving survey or interview procedures or observation of public behavior, does not apply to research with children, Subpart D, except for research involving observations of public behavior when the investigator(s) do not participate in the activities being observed.

**Justification:** Please provide a justification for why this research meets the exempt category (i.e., explain how the research you are proposing belongs to the selected categories above): (Boxes will expand, or if necessary, attach additional pages.)

The research will focus on determination of selected course management systems (classroom management method) advantages and challenges. The research will be conducted in commonly accepted education setting, involving normal educational practices.
## Project Description

**Abstract:** Provide an abstract of the proposed research *in language that can be understood by a non-scientist*. The abstract should summarize the objectives of this project and the procedures to be used, with an emphasis on what will happen to the subjects. Feel free to use as much space as needed to provide a thorough abstract. (Boxes will expand, or if necessary, attach additional pages.)

The proposed research topic is Determination of Selected Course Management Systems Advantages and Challenges. Potential findings are the advantages and challenges of different Course Management Systems, such as Blackboard, Moodle, and Lotus. I plan to survey the online faculty and student's perspectives and satisfaction of the Course Management System. I will group them into (1) Online faculty and students with Blackboard experience and (2) Online faculty and students without Blackboard experience.

I do not necessarily have to access to their courses. I just hope the faculty would participate by (1) posting my survey/questionnaire in their course and encouraging students to take it and (2) taking the survey themselves. This should take place at least about a month prior to the end of the semester - to allow me time to conclude the findings.

**Subjects:** Describe and quantify the subject population for this study, including the number of subjects expected to be enrolled, and describe how the subjects will be recruited for participation. (Boxes will expand, or if necessary, attach additional pages.)

Online faculty and online students at Morehead State University who are currently using Moodle as an instructional tool to teach and learn. Possibly five faculty who are currently teaching online courses using Moodle Course Management System in the Spring 2011 semester will be recruited. In addition, all the enrolled students in those courses will be recruited to participate in the research. Faculty’s participation will be taking online survey and telephone interview. Student’s participations will be taking online survey.

**Consent:** Describe the process by which consent will be obtained and documented from subjects. If consent or documentation of consent is not being obtained, you must formally request a waiver from the IRB and fully justify why the informed consent and/or signed informed consent requirement(s) should be waived. (Boxes will expand, or if necessary, attach additional pages.)

I think it can be waived as stated, "Study participation presents minimal risk of harm to the subject and the research involves no procedures requiring consent outside the context of participation in a research study." I will apply for a waiver. For the online survey, I will provide the cover letter to introduce the research to the participants.

**Are MSU student subjects being recruited?**  
☐ YES □ NO

If you answered yes, clearly address all items in the "MSU STUDENTS AS SUBJECTS" Form before submitting your protocol application. If you answered no, simply indicate that the items are not applicable to your research.
**MSU STUDENTS AS SUBJECTS**

The following sections must be completed if applicable to your research. (Note: The information also must be included in the informed consent documents as required by federal and IRB regulations.)

Clearly address all items below before proceeding to the next question or if you answered no, simply indicate that the items are not applicable to your research.

**Instructor (not subject) Safeguards:**

Describe how permission to use subjects will be obtained. (Boxes will expand or, if necessary, attach additional pages.)

Contacting each potential instructor and asking for a permission

If MSU students are recruited as subjects in an instructor’s class, explain how you will inform instructors that they can refuse to allow the research to be conducted in their class. (Boxes will expand or, if necessary, attach additional pages.)

For recruiting instructor - by asking the distance education department to communicate to the potential instructors privately about the research. And if they are willing to participate, each instructor will contact the researcher directly. If they refuse, no further action is needed.

**Additional Information:**

Clearly indicate whether participation as a research subject in this study fulfills a course requirement (i.e., all students are expected to participate in exchange for course credit) or will be conducted without fulfilling a course requirement (i.e., students may choose whether or not to participate without considering course requirements). If participation will fulfill a course requirement, clearly indicate that the instructors for the courses involved will establish appropriate alternative assignments that students may complete if they choose not to be a subject in this research. (Boxes will expand or, if necessary, attach additional pages.)

The participation will be conducted without fulfilling a course requirement.

---

Morehead State University
Clearly indicate how the students will be informed that no penalty will be incurred for non-participation in the research. (Boxes will expand or, if necessary, attach additional pages.)

The instructor will post the information indicating that the responses are anonymous and is not accessible by the instructor. The online survey is external and not associated with the Course Management Systems. And there is no penalty will be incurred for non-participation in the research.

<table>
<thead>
<tr>
<th>Are any of the MSU student subjects in the researcher's class or under his/her direct supervision?</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] YES [ ] NO</td>
</tr>
</tbody>
</table>

**NOTE:** Researcher must use a third party to solicit participation, administer the study, and collect data from subjects when they are students in the researcher's class or when they are employees or supervisees of the researcher.

If you answered yes, clearly address all items in the subject safeguards section below before proceeding. If you answered no, simply indicate that the items are not applicable to your research.

**Subject Safeguards:**

Identify third party who will solicit subjects, administer and collect informed consent and all instruments, and retain documents until final grades are submitted. (Boxes will expand or, if necessary, attach additional pages.)

n/a

Identify third party as a contact for subjects to notify if they wish to withdraw from the research project. (Boxes will expand or, if necessary, attach additional pages.)

n/a
Online training in the protection of human subjects in research is required for all researchers. To complete this training (CITI), go to [http://www.citiprogram.org](http://www.citiprogram.org). Once you have completed your online training, please attach a copy of your Course Completion Record to your completed protocol application. If your research involves prisoners, children, elementary and secondary schools, international or internet research, you must complete CITI online training corresponding with your special population and attach your Course Completion Record on the relevant topic(s) to your completed application.

After you have completed all other parts of your protocol application, read the information below and sign if you agree with the researcher assurances and responsibilities.

**Researcher Assurances and Responsibilities:**

As principal investigator(s)/researcher(s), I hereby assure that I will follow procedures to safeguard and protect the rights and welfare of the subjects of my research. I will not begin data collection until I receive a written approval from the IRB.

If data are to be collected from college students and/or other MSU employees, I will use a third party to solicit participation, administer the study, or collect data when subjects are either students in a course for which I am the instructor or under my direct supervision.

As principal investigator(s)/researcher(s), I acknowledge responsibility for protecting the rights and welfare of human subjects; complying with all applicable federal and IRB regulations; conducting the research according to the IRB exempt protocol; reporting any changes in previously approved protocols to the IRB prior to implementation; reporting unanticipated injuries or problems involving risks to human subjects to the IRB; maintaining all approved protocol documents and notifications for three years after completion of the protocol; and supervising research conducted by students.

If your study is determined to be exempt by the IRB committee, you are not required to complete continuation or final review reports. However, if any revisions are made to a project or if any unexpected risks arise during an investigation, it is your responsibility to notify the IRB by submitting a Part H (Change of Status) fully explaining all changes or unexpected risks, prior to making any changes to the study. Please note that changes made to an exempt protocol may disqualify it from exempt status and may require an expedited or full-board review.

After your application is approved, the Office of Research and Sponsored Programs will hold your exemption application for six years. Before the end of the sixth year, you will be notified that your protocol will be closed. If your project is still ongoing, you will need to contact the Office of Research and Sponsored Programs upon receipt of that letter and follow the instructions for completing a new exemption application. It is important that you keep your address current with the Office of Research and Sponsored Programs.

It should be noted that research involving children may not qualify for exemption.

Please submit two (2) copies of the completed Request for Exemption From Federal Regulations, CITI Training Documentation, Consent Documents (if applicable), Questionnaires/Surveys etc., (if applicable), Support Letters or any other documentation that would be useful in reviewing the protocol application to the IRB Administrative Assistant in the Office of Research and Sponsored Programs (901 Ginger Hall).

**Signature of Principal Investigator(s)/Researcher(s)**

Date

**As faculty advisor, I hereby accept responsibility for the conduct of this project.**

**Signature of Faculty Advisor**

Date

Do not write below this line

**Date Received:**

**Protocol Review Number:**

**Review Completed:**

**Notification Sent:**

Morehead State University
CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report
Printed on 2/22/2011

Learner: Dolruedee Suppacheewa (username: dsuppacheewa)
Institution: Morehead State University

Contact Information
PO Box 1042
Madisonville, KY 42431 USA
Department: n/a

Group 1 Social and Behavioral Research (six modules):

Stage 1. Basic Course Passed on 02/22/11 (Ref # 5675749)

<table>
<thead>
<tr>
<th>Required Modules</th>
<th>Date Completed</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>02/22/11</td>
<td>no quiz</td>
</tr>
<tr>
<td>History and Ethical Principles - SBR</td>
<td>02/22/11</td>
<td>4/4 (100%)</td>
</tr>
<tr>
<td>Defining Research with Human Subjects - SBR</td>
<td>02/22/11</td>
<td>5/5 (100%)</td>
</tr>
<tr>
<td>The Regulations and The Social and Behavioral Sciences - SBR</td>
<td>02/22/11</td>
<td>3/5 (60%)</td>
</tr>
<tr>
<td>Assessing Risk in Social and Behavioral Sciences - SBR</td>
<td>02/22/11</td>
<td>5/5 (100%)</td>
</tr>
<tr>
<td>Informed Consent - SBR</td>
<td>02/22/11</td>
<td>5/5 (100%)</td>
</tr>
<tr>
<td>Privacy and Confidentiality - SBR</td>
<td>02/22/11</td>
<td>4/5 (80%)</td>
</tr>
<tr>
<td>Morehead State University Module</td>
<td>02/22/11</td>
<td>no quiz</td>
</tr>
</tbody>
</table>
For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator
Dear MSU Online Students,

I am a graduate student in the Industrial and Technology Engineering program at the Morehead State University (MSU). Currently, I am working on a thesis; my proposed thesis topic is **Determination of Selected Course Management Systems Advantages and Challenges**.

I would like to obtain information from you by surveying about your perspectives and satisfaction of the Course Management System that you are currently using. The purpose of the study is to determine the advantages and challenges of the selected Course Management Systems, such as Blackboard and Moodle supported by Moodlerooms.

*Taking the survey is voluntarily, it will take approximately 4-5 minutes to complete.* Your responses are anonymous, securely collected, and maintained. The responses are only being used for this study. Your instructor(s) has no access to the collected responses. If decided, you can stop taking the survey at anytime. **However, I strongly encourage you to take and complete the survey.** Your provided responses will help me to generate the findings for my study.

*Your participation, time, and effort are highly appreciated during this process.*

Thank you,

Dolruedee ‘Tang’ Suppacheewa
**Instruction:** For each question, please select one of the most appropriate answers that represent your perspectives and satisfaction about Moodle supported by Moodlerooms and Blackboard.

*Taking the survey is voluntarily. It will take approximately 4-5 minutes to complete.*

Your responses are anonymous, securely collected, and maintained.

**Student Evaluation of Moodle supported by Moodlerooms,**

Spring 2011

| If you were given the option to take courses using either Moodle 1.9 supported by Moodlerooms or Blackboard 7.3, which would you choose? |
|---|---|
| Moodle supported by Moodlerooms | Blackboard 7.3 |

<table>
<thead>
<tr>
<th>Questions</th>
<th>Strongly Agree</th>
<th>Somewhat Agree</th>
<th>Somewhat Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodlerooms is easy to use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodlerooms is flexible.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodlerooms helps me reach my learning goals.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Moodlerooms fits my learning style.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Better than BB</th>
<th>About the same as BB</th>
<th>Worse than BB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability and Stability when Accessing the Course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle is relatively easy to learn.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of Navigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle’s interface is consistent.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility and Organization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submitting and Tracking Assignments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasks require an appropriate number of mouse clicks.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The user interface for students is intuitive.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle is compatible across different platforms.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quizzes, Feedback, and Grades</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Assignment Submission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gradebook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperlinks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The built-in online help feature provides the necessary support.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syllabus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Announcements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning Modules</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributing to Discussions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication with Faculty or Peers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Participation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicating with Classmates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roster</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicating with Instructor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mail</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Moodle supported by Moodlerooms is **more difficult** to learn on my own than Blackboard was.

<table>
<thead>
<tr>
<th>Strong Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strong Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dear MSU Online Faculty,

Thank you very much for your willing and participations in my research, Determination of Selected Course Management Systems Advantages and Challenges. The purpose of the study is to determine the advantages and challenges of the selected Course Management Systems, such as Blackboard and Moodle supported by Moodlerooms.

I would like to obtain information from you and your students by surveying about perspectives and satisfaction of the Course Management System that you and your students are currently using. This should take place at least about a month prior to the end of the semester – to allow me time to conclude the findings.

To obtain student's responses, I would like to ask you to post my survey/questionnaire in each of your course/session and encourage students to take it within timely manner.

To obtain your responses, I would like to ask you to take the survey yourself. I would send an email to direct you to the online survey's web address, which it is different than the student's.

All responses are anonymous, securely collected, and maintained. The responses are only being used for this study. Your and students' participations will help me to generate the findings for my study.

Your participation, time, and effort are highly appreciated during this process.

Thank you,

Dolruedee ‘Tang’ Suppacheewa
**Instruction:** For each question, please select one of the most appropriate answers that represent your perspectives and satisfaction about Moodle supported by MoodleRooms and Blackboard.

*Taking the survey is voluntarily, it will take approximately 5-10 minutes to complete.*

Your responses are anonymous, securely collected, and maintained.

**Faculty Evaluation of Moodle supported by MoodleRooms, Spring 2011**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Strongly Prefer Moodlerooms</th>
<th>Slightly Prefer Moodlerooms</th>
<th>Neutral</th>
<th>Slightly Prefer Blackboard</th>
<th>Strongly Prefer Blackboard</th>
<th>Did Not Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment and Grading Tools</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Gradebook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Syllabus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Assignments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Assessments/Quizzes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Grade Tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Communications Tools</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Mail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Announcements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Discussions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Whiteboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Web Links</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Calendar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools</td>
</tr>
<tr>
<td>* Units/Topics/Modules</td>
</tr>
<tr>
<td>* Roster/Participants List</td>
</tr>
<tr>
<td>* Tracking and Reports</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Available Abilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>* TA Role</td>
</tr>
<tr>
<td>* Instructor/Designer Role</td>
</tr>
<tr>
<td>* Faculty's Demo Role</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Intuitiveness</td>
</tr>
<tr>
<td>* Consistency</td>
</tr>
<tr>
<td>* Simplicity</td>
</tr>
<tr>
<td>* Ability to</td>
</tr>
<tr>
<td>Customize</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>* Ability to Organize</td>
</tr>
<tr>
<td>* 508 Compliance</td>
</tr>
<tr>
<td><strong>Ease of Use</strong></td>
</tr>
<tr>
<td>* Content Creation</td>
</tr>
<tr>
<td>* Content/File Management</td>
</tr>
<tr>
<td>* Quiz/Assessment Creation</td>
</tr>
<tr>
<td>* Course Management</td>
</tr>
<tr>
<td>* Overall Course Design</td>
</tr>
<tr>
<td><strong>Training and Support</strong></td>
</tr>
<tr>
<td>* Ease of Training</td>
</tr>
<tr>
<td>* Usefulness of Help Feature</td>
</tr>
<tr>
<td>* Ease of Initial Configuration</td>
</tr>
<tr>
<td>Migrate and Import Tools</td>
</tr>
<tr>
<td>* Accessibility of Tools</td>
</tr>
<tr>
<td>* Migrate between Sections</td>
</tr>
<tr>
<td>* Migrate between Products</td>
</tr>
<tr>
<td>* Import Learning Objects</td>
</tr>
<tr>
<td>* Backup and Save Course</td>
</tr>
</tbody>
</table>

| Compatibility |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| * Browser Compatibility |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| * Cross-Platform Compatibility |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| * JAVA Compatibility |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

<p>| Reliability |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| * Consistency of |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |</p>
<table>
<thead>
<tr>
<th>User Experience</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>* Reliability of User Experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Frequency of System Errors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slightly Prefer</td>
<td>Slightly Prefer</td>
<td>Slightly Prefer</td>
<td>Slightly Prefer</td>
<td></td>
</tr>
<tr>
<td>Moodie-Blackboard</td>
<td>Moodie-Blackboard</td>
<td>Moodle-rooms</td>
<td>Moodle-rooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Preference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>