An Exploration of Blackboard Utilization by Faculty at a Midwestern University

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Abstract

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This study sought to explore utilization of Blackboard features/tools and to identify barriers to using Blackboard as stated by faculty. A descriptive research design was employed to answer the research questions in this study. A web-based survey was used to collect data from the 272 responding faculty members from a large Midwestern university consisting of six campuses. The findings of this study, based on analysis of nonparametric descriptive data, indicate underutilization of Blackboard features/tools by faculty, and that campus affiliation and Blackboard utilization are not independent of each other. Utilization of other LMSs and the number of technical problems with Blackboard are the most common barriers to the utilization of Blackboard as stated by faculty. Lack of technical skills and training also contribute to faculty underutilization of Blackboard. This study concluded that a comprehensive training program and improved infrastructure may increase Blackboard utilization by faculty.

Approved: _____

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Chapter 1: Introduction

Advances in technology are continually changing and reshaping virtually every facet of our society and daily lives. Higher education institutions around the world are striving to stay current with the technological advances. A stroll across the campus of most universities or colleges today would reveal students engaged in learning using a variety of portable electronic devices. The constant evolution of technology has enhanced students' abilities to engage in learning virtually at any time and from anywhere (Chawdhry, Paullet, & Benjamin, 2011).

To meet the learning needs and demands of students, institutions of higher learning are attempting to offer learning opportunities that are more mobile and less restrictive in structure and access. To achieve this goal, many universities and colleges employ the use of a Learning Management System (LMS). An LMS, sometimes referred to as a Course Management System (CMS), is web-based software that offers various features including course management tools, evaluation and assessment tools, and interactive synchronous and asynchronous collaborative tools (Morgan, 2003).

While an LMS is often used to facilitate and augment traditional classroom based courses, it provides institutions a medium with which to address two current trends in higher education: online courses and enhancing collaborative learning (Parker & Ingram, 2011). Use of an LMS not only addresses flexibility issues in scheduling, but increases access to higher education opportunities for many people (Landry, Griffeth, & Hartman, 2006).

University and college decision-makers often face the arduous task of evaluation, selection, and implementation of an LMS (Alias & Zainuddin, 2005; Daniels, 2009). When deciding on which LMS is most appropriate for their institution, administrators and decision-makers must consider many factors including cost of the LMS; net benefit to the institution, faculty, and students; and faculty utilization of the product (Daniels, 2009; Jarrahi, 2010; Vovides, Sanchez-Alonso, Mitropoulou, & Nickmans, 2007). Higher education institutions are often investing considerable amounts of money and resources to implement and support an LMS at their institutions (Govindasamy, 2001; West, Waddoups, & Graham, 2007). Whether a commercial product such as Blackboard, or Joomla, or an Open Source product such Moodle is utilized, it is important to ascertain the level of faculty utilization of the LMS at the institution.

Statement of the Problem

A large Midwestern university, the higher education institution in this study, has implemented and provides technical support for Blackboard as the university wide LMS, including regional campuses. During the 2011-2012 academic year, the university will spend $146,800 in licensing fees and an estimated $75,300 for Premium Support for Blackboard (A. Leatherwood, personal communication, July 2011). Given the current economic climate and reductions in funding, it is important to gain a better, if limited, understanding of the utilization of Blackboard by the faculty at this university.

There has been a great deal of literature regarding the use of various LMSs, however, there has not been recent information published on the utilization of Blackboard

at this higher education institution. It is important to understand whether the faculty are utilizing a product for which the university is paying a licensing fee.

Having a better understanding of the commonly utilized Blackboard features/tools, the amount of faculty actively utilizing Blackboard for their course related activities and/or assignments, and some common barriers experienced by faculty with the utilization of Blackboard will provide valuable information to university administrators and decision-makers (West et al., 2007). This knowledge will assist in the evaluation of the usefulness of the Blackboard as the university-wide LMS (Jarrahi, 2010). It will also help inform decisions about possible additions of features/tools to the current LMS (Jarrahi, 2010). Academic technology staff can incorporate this information when designing and implementing Blackboard workshops for the university community (Keesee & Shepard, 2011).

Purpose of the Study

The primary purpose of this study is to gain a better understanding of the utilization of Blackboard as the university-wide LMS at a large Midwestern University. This study intends to:

1. Determine the number of faculty, engaged in teaching summer quarter 2011 courses, who are using any feature/tool in Blackboard for their course related activities and/or assignments, and to determine if faculty utilization of Blackboard is independent of campus type affiliation.

2. Identify which Blackboard features/tools are most commonly utilized by faculty in their course related activities and/or assignments, and the likelihood

of increased Blackboard utilization based on the addition of an electronic

portfolio.

3. Explore barriers to utilizing Blackboard commonly reported by faculty.

Evaluation of the usefulness, appropriateness, and benefits to the members of the

university community of an LMS is vital to ensure academic goals and standards are

being met, and to determine cost-effectiveness of the LMS. This information will assist

university administrators and decision-makers in the evaluation of Blackboard as the

university supported LMS at this institution. Academic Technology staff can incorporate

the information gained from this study to develop Blackboard training programs to meet

the needs of the members of the university community. Finally, information gained from

this study will add to the body of knowledge regarding the utilization of Blackboard at

higher education institutions.

Research Questions

This study seeks to gain a better understanding of the utilization of Blackboard by

faculty engaged in teaching courses at a Midwestern university during the 2011 summer

quarter. The research questions for this study are as follows:

R1: Is the utilization of Blackboard by faculty for their course related activities

and/or assignments independent of campus affiliation?

R2: Which Blackboard features/tools are commonly utilized by faculty for their

course related activities and/or assignments, and is likelihood of increased

Blackboard utilization based on the addition of an electronic portfolio?

R3: What are the barriers to utilizing Blackboard commonly reported by faculty?

Significance of the Study

There has been a great deal of literature published regarding LMS features/tools utilization from the students' perspective (Graf, Liu, & Kinshuk, 2010; Landry et al., 2006; Parker & Ingram, 2011), however, there is limited research regarding which Blackboard features/tools faculty utilize most often in their courses (West et al., 2007). This study will add to the body of information pertaining to faculty utilization of Blackboard features/tools to enhance and/or augment their course content.

Much of the research relating to the utilization of an LMS at higher education institutions has been conducted at universities consisting of one campus (Henninger & Kutter, 2010; Jarrahi, 2010; Keesee & Shepard, 2011; Lewis, Baker, & Britigan, 2011). This study is being conducted at a large Midwestern university consisting of six campuses at various locations throughout the state. Perception of usefulness and utilization of technology varies from person to person (Parker & Ingram, 2011). Surveying faculty from different campuses within the same university will provide a more comprehensive view of Blackboard utilization.

Continual advances in the technologies used to deliver education necessitate ongoing evaluation of the utilization, effectiveness, and user satisfaction of the technologies (Tella, 2011). As the technologies change, so do the barriers to the use of the technologies (Daniels, 2009). It is the intention of this study to provide information regarding barriers to the utilization of Blackboard experienced by faculty using the current version of the LMS, Blackboard 9.0.

Delimitations

  The delimitations and limitations of this study are:

1. This study only focuses on the utilization of Blackboard as the LMS.

2. This study only focuses on the faculty at a large Midwestern University.

3. The population for this study was limited to faculty engaged in teaching courses during the 2011 summer quarter.

4. Teaching Assistants and/or Graduate Assistants were not included for participation in this study.

Definition of Terms

Blackboard: A commercial Learning Management System which offers various features and tools including course content design and management, evaluation and assessment, synchronous and asynchronous collaborative learning activities, multi-media course content, and multi-modal communication (Blackboard, 2011).

Blended course: A course consisting of traditional face-to-face meetings as well as synchronous and/or asynchronous online components. Hybrid course is another term used for blended course (Mortera-Gutierrez, 2006).

Blog: "a Web site that contains an online personal journal with reflections, comments, and often hyperlinks provided by the writer; *also***:** the contents of such a site" (Blog, n.d.).

Chat: A tool available in many LMSs used to facilitate synchronous communication between members of a class, group, or community in an online environment (Blackboard, 2011; Smith, 2006).

Discussion board: An electronic tool facilitating asynchronous discussions by allowing

the posting of forums (questions or topics) and allowing a user to respond by creating and

posting a thread (written content responding to question or topic) and also allows for

replies (comments) to threads (Blackboard, 2011; Pulford, 2011).

Distance learning: Learning that is designed and developed in one location by the

instructor, and received and completed by a student in another location (Montes &

Gonzales, 2000).

E-learning: The delivery of education through the use of an electronic medium (Clark &

Mayer, 2011).

Electronic portfolio (e-portfolio): A collection of a student's assignments, presentations,

projects, and writings that can be accessed, edited, or evaluated electronically. Often used

for student assessment purposes or presented to potential employers (Garrett, 2011;

Rhodes, 2010).

Faculty: A person who engages in teaching or instruction at an institution of higher

education.

Higher education institutions: An institution that provides post-secondary education and

the institution is accredited and authorized to confer degrees/diplomas by the appropriate

accrediting agencies. These institutions include but are not limited to universities,

colleges, technical colleges, and institutes of technology.

Learning Management System (LMS):

> A software application or web-based technology used to plan, implement, and
>
> assess a specific learning process. Typically, a learning management system

provides an instructor with a way to create and deliver content monitor student

participation, and assess student performance online (Alias & Zainuddin, 2005, p.

28).

LiveText:

The LiveText tool suite is a comprehensive, web-based learning assessment and

accreditation management service. The web-based platform allows work to be

authored or uploaded and evaluated by your program's customized assessment

instruments, data being reported at various levels for the tracking of student

progress and program evaluation (LiveText, 2011, Overview section para. 2).

Moodle: An Open Source Learning Management System that "Many institutions use it as

their platform to conduct fully online courses, while some use it simply to augment face-

to-face courses (known as blended learning)" (Moodle, 2011, What Is Moodle section,

para. 1).

Online course: "A course where most of all of the content is delivered online. Typically

have no face-to-face meetings" (Sloan Consortium, 2010, p. 5).

Podcast: A recording of one voice made which can be upload to an online medium and

download or streamed by other people (Ko & Rossen, 2010).

Qualtrics: A web-based survey tool that allows the user to design and distribute online

surveys as well as collect responses and analyze data (Qualtrics, 2011).

Social presence: The perceived awareness of other achieved through communications

and interactions between members of a group or community (Gunawardena, 1995).

University community: The groups present in a university or college setting including:

administrators, support non-instructional staff, faculty or instructors, teaching and

graduate assistants, and students.

Virtual classroom: A tool available in Blackboard that allows for the creation of a

synchronous online classroom environment. This tool enables the sharing of documents,

synchronous chatting, and shared presentations (Blackboard, 2011).

Wiki: "A collaborative document-writing tool. Any site participant may add or modify

additional pages and a history of changes is automatically recorded." (Lonn & Teasley,

2009).

Organization of the Study

Chapter 1 provides the following: background information for the study, the

statement of problem, purpose of the study, research questions, significance of the study,

delimitations and limitations of the study, and definition of terms.

Chapter 2 provides a review of the literature regarding the use of an LMS at

higher education institutions. Chapter 3 provides information about the methodology,

particularly information related to the research design and data collection process

employed in this study. Chapter 4 provides analysis of the results generated from the data

collected during this study. Finally, Chapter 5 provides discussion about the findings of

the study, conclusions based on the results of the study, and recommendations for further

research and actions to be considered.

Chapter 2: Literature Review

Technological advances have spurred many higher education institutions around the world to re-evaluate how they offer their courses (Govindasamy, 2001; O'Quinn & Corry, 2002; Tella, 2011). Increased access to technology by the masses has encouraged many universities and colleges to begin offering online courses in an attempt to increase access to higher education and institutional revenue (Sloan Consortium, 2010). According to the results of the Sloan Consortium survey, in the fall of 2010, 74.9% of public universities reported, "Online education is critical to the long-term strategy of my institution" (p. 7).

With online course offerings on the rise, higher education institutions are looking at various technologies to meet the needs of the students of today and the future. One option many universities are exploring is the ability to deliver education with the assistance of technology. The most common form of technology used for delivering education is a Learning Management System (LMS) (Graf et al., 2010; Morgan, 2003; Unal & Unal, 2011).

Jarrahi (2010) stated, "many institutions are increasingly investing hundreds of thousands of dollars in these technologies" (p. 257). Assessing the utilization of these technologies, for which the institutions are paying considerable amounts of money, is vital to the continued success of the institutions – both academically and financially (West et al., 2007). Two themes emerged during the review of the literature: common uses of an LMS at higher education institutions, and common reasons for underutilization of an LMS at higher education institutions (Jafari, McGee, & Carmean, 2006). For ease

of reading, locating, and accessing information in this section, the first theme will be broken into the following sub-sections: selection, implementation, and evaluation of an LMS; commonly utilized Blackboard features/tools; LMS use in traditional and blended courses; and LMS use in online, e-learning, and distance learning courses.

Common Uses of an LMS at Higher Education Institutions.

       Selection, implementation, and evaluation of an LMS.

       The process of selection and implementation of an LMS typically involves various members of the university community including administrators, faculty, information technology staff, instructional design team or staff, and often student representatives. Many factors must be taken into consideration during this process: needs of the university, needs of the faculty, needs of current and future students, and net benefits to all (Daniels, 2009; Kessee & Shepard, 2011; Lewis et al., 2011).

       Testing or piloting many of the features and tools in an LMS, by various members of the university community, is often a part of the selection process (Daniels, 2009). Although these tests or pilots can provide initial information in the decision-making process, until the LMS is implemented and utilized on a large scale, the full impact and benefits of the LMS will not be known (Unal & Unal, 2011).

       Many faculty and administrators become interested in a particular LMS based on the features and tools offered in the product (Alias & Zainuddin, 2005; Govindasamy, 2001; Vovides et al., 2007). The benefits to the faculty, staff, and administration are normally given great consideration during the selection process, but the impact of the

LMS on student learning needs to be given equal if not greater consideration (Daniels, 2009; Núñez et al., 2011).

Once the decision to implement a particular LMS is made, it then becomes paramount for the successful integration of the product into the institution that faculty and student utilize the features/tools offered in the LMS (Alias & Zainuddin, 2005; Daniels, 2009). To encourage the utilization of the technology by the members of the university community, key features/tools and potential benefits are typically marketed throughout the institution. One key benefit, often presented to both faculty and students, is the flexibility afforded by the LMS (Henninger & Kutter, 2010). An LMS provides flexibility not only for scheduling course-meeting times, but in the students' ability to access documents, multi-media presentations, and recorded meeting or chats.

Training for members of the university community can be crucial in determining the utilization of an LMS at an institution (Alias & Zainuddin, 2005). Training programs should be designed and implemented for all potential users of the LMS. Training programs should include preliminary training prior to a system wide launch of the LMS. Continuation of a training program will provide refresher information to current members of the faculty, as well as initial or updated training for new faculty members (Lewis et al., 2011).

Once the LMS is in place, faculty typically begin testing or playing with the features/tools to determine which will best suit their needs and enhance the students' learning process. This experimenting or testing allows them to learn how the features/tools work, and determine how the features/tools can be utilized to enhance

course content and material to promote student learning in their courses (West et al., 2007; Daniels, 2009). Henninger and Kutter (2010) identified the "basic functions of learning management systems as:

- Administration of teachers, learners, courses and more

- Communication tools (synchronal and asynchronal)

- Presentation of learning content

- Tools for building exercises

- Assessment tools" (p. 11).

These basic functions or features can be utilized in a multitude of ways to achieve various goals.

Graf, Liu, and Kinshuk (2010) provided a more in depth description of the functions and features of an LMS:

LMSs provide teachers with the many features to create, manage and administrate online courses, allowing them to include different kinds of learning objects/activities such as learning materials, forums, quizzes, examples, and so on, and facilitating administrative issues such as enrollment grading and monitoring the learner's progress and performance. (p. 116)

Faculty often use various features/tools or aspects of the features/tools to achieve their course objectives or learning outcomes.

Evaluation is an important process of any project or product implementation. When evaluating an LMS, universities need to consider several factors. Tella (2011) summarized: ". . . Content Quality, System Quality, Support Service Quality, Teaching

and Learning Quality, Self-Regulated Learning, Intention to Use/Use, User Satisfaction

and Net Benefits are important dimensions for measuring Blackboard CMS success" (p.

72). The terms Course Management System (CMS) and Learning Management System

(LMS) are often used interchangeably in field of education (Daniels, 2009).

Measuring the success or perceived success of an LMS is an ongoing and

continuous process. As technology advances and new features/tools are added to the

LMS, the re-evaluation process can provide valuable information concerning the LMS's

ability to continue to meet the needs of the institution, faculty, and students (Stoltenkamp,

Kies, & Njenga, 2007).

Common LMS features/tools

There are many features/tools available in an LMS that can be used to design,

manage, augment, enhance, and support learning activities (Jafari et al., 2006; Lonn &

Teasley, 2009; Morgan, 2003; Vovides et al., 2007; West et al., 2007). Available

features/tools vary from product to product, but most LMSs have the same basic

features/tools (Jarrahi, 2010). The Midwestern University, at which this study was

conducted, employs Blackboard version 9.0 as the supported LMS for university-wide

use.

For the purposes of this study, the Blackboard features/tools investigated were

grouped into five broad categories: (1) course management/administration consisting of

posting syllabus, posting course related materials, posting links to external resources, and

recording grades in the grade center (Daniels, 2009; Govindasamy, 2001; Jefferies,

Grodzinsky, & Grifin, 2003; Yueh & Hsu, 2008); (2) assessment and evaluation

consisting of assignment submission, quizzes, exams, and surveys (Buzzetto-More, 2008; Henninger & Kutter, 2010; Lewis et al., 2011); (3) collaborative workspaces consisting of discussion boards, wikis, and blogs (Alias & Zainuddin, 2005; Cifuentes, Xochihua, & Edwards, 2011; Henninger & Kutter, 2010); (4) audio or video resources and materials consisting of podcasts and embedding audio or video materials (Chawdry et al., 2011; McCabe & Meuter, 2011); and (5) interactive communication consisting of virtual classroom and chat (Jarrahi, 2010; Parker & Ingram, 2011).

Although many of these features/tools have been designed with specific intended functions or uses, faculty often utilize the features/tools or a combination of the features/tools in various ways to fit their course needs (Cifuentes et al., 2011; Lonn & Teasley, 2009; Malikowski, 2008; Morgan, 2003).

Course management/administration tools are typically used for posting and distribution of syllabi and other course related documents as well as monitoring student performance through the grade center (Daniels, 2009; Govindasamy, 2001; Morgan, 2003). The features/tools in this category allow the instructor to create or post a syllabus, and provide virtually limitless access to the documents by students (Chawdhry et al., 2011). Utilizing the features/tools in this category, faculty can post links to outside resources and websites for student use in the course (Landry et al., 2006; Lewis et al., 2011). The online grade center allows students to monitor their progress in the course and receive almost instant feedback from the instructor (Buzzetto-More, 2008; McCabe & Meuter, 2011; Morgan, 2003). Results of several studies indicate the Blackboard

features/tools in this category are the most utilized by faculty (Jarrahi, 2010; Morgan, 2003; Tella, 2011; Vovides et al., 2007; Woods, Baker, & Hopper, 2004).

Assessment and evaluation is crucial in any education setting including education delivered electronically or in an online environment (Thorpe, 1998). Utilizing the assessment and evaluation features/tools in Blackboard, faculty can design, deploy, evaluate, and provide feedback for various types of assignments, tests, surveys, and quizzes (Lansari, Tubaishat, & Al-Rawi, 2010; Lewis et al., 2011). Faculty can enjoy the added benefit of Blackboard grading the test or quiz, based on answers provided by the faculty, and automatically recording the grade in the grade center (Blackboard, 2011; Buzzeto-More, 2008; Woods et al., 2004). In her 2008 study, Buzzeto-More reported students identified the online assignment submission as the most popular Blackboard feature/tool.

Collaboration is an advantage afforded by the utilization of Blackboard (Beatty & Ulasewicz, 2006; Chawdhry et al., 2011). Faculty can use the various Blackboard features/tools to encourage and facilitate communication between the students and the faculty (Beatty & Ulasewicz, 2006; Henninger & Kutter, 2010). Discussions boards are often used to facilitate an asynchronous classroom discussion related to a particular topic or concept (McCabe & Meuter, 2011; Rempel & McMillen, 2008). Forums can be created to which responses, and replies to responses, can be posted by the members of class (Blackboard, 2011; Pulford, 2011; Unal & Unal, 2011). Wikis and blogs are Blackboard tools that can be used to create an online collaborative environment providing students with the ability to share thoughts and ideas by posting and editing information

(Cobus, 2009; McCabe & Meuter, 2011). While the collaboration tools have been identified as being utilized less than content management and assessment/evaluation tools, the discussion board is more commonly used of these collaborative tools (Malikowski, 2008; McCabe & Meuter, 2011).

The use of audio and/or video material in online courses can enhance the learning experience of the students by allowing them to hear and/or see what the instructor is attempting to teach (Pace & Kelly, 2006). To achieve the goal of providing audio and/or video materials to students, faculty have the ability to embed the audio or video materials in Blackboard, allowing the student to hear or see the materials in the Blackboard site (Blackboard, 2011; Chawdhry et al., 2011). Blackboard has a podcast feature that allows faculty to upload or link a podcast that has been created using other software (Blackboard, 2011; McCabe & Meuter, 2011).

Synchronous interactive communication between students and faculty is a vital component of many online courses (Larkin & Belson, 2005; McCabe & Meuter, 2011). Blackboard incorporates tools such as chat and the virtual classroom to facilitate interactive communication in courses (Larkin & Belson, 2005; McCabe & Meuter, 2011; Smith, 2006). This availability of communication allows faculty to provide feedback and guidance to the students in a virtually continuous manner (Jefferies et al., 2003). This process of constant two-way communication between faculty and students can help improve students' overall performance in the course (Yueh & Hsu, 2008).

Many of the communication tools have the ability to be utilized both synchronously and asynchronously (Jefferies et al., 2003; Larkin & Belson, 2005;

McCabe & Meuter, 2011). In their 2011 study, McCabe and Meuter noted "the asynchronous nature of these tools allows for expanded contact between faculty and students . . ." (p. 3). With the assistance of the communication tools available in Blackboard, students have the ability to go back and review a recorded chat or virtual classroom session after the session has ended, which is not a luxury afforded in most face-to-face courses (Blackboard, 2011; Larkin & Belson, 2005). Despite these advantages, synchronous and asynchronous communication tools are utilized less by faculty than content management, assessment/evaluation tools, and collaboration tools (Malikowski, 2008; McCabe & Meuter, 2011; Yueh & Hsu, 2008).

Electronic Portfolios (E-Portfolios) in higher education.

Use of electronic portfolios has been rapidly increasing at higher education institutions, particularly in the field of teacher education (Rhodes, 2010; Wang, 2009). An electronic portfolio is an electronic collection of a student's assignments, projects, presentations, writings, and assessments accumulated during their college career (Garrett, 2011; Tubaishat, Lansari, & Al-Rawi, 2009; Wang, 2009). There are many benefits for students that can be derived from the use of an electronic portfolio including reflective thought and evaluation of one's work, fulfillment of program requirements, and use for potential employment opportunities (Tubaishat et al., 2009; Wang, 2009).

While the utilization of electronic portfolios is quickly increasing in the field of teacher education, largely due to accreditation standards, other programs and fields of study are recognizing the potential benefits of electronic portfolios for their students

(Garrett, 2011; Ntuli, Keengwe, & Kyei-Blankson, 2009; Rhodes, 2010; Tubaishat et al., 2009).

Providing students with the capability to store and track their academic work over the course of their enrollment in a program, affords students the ability to reflect on their progress and development (Rhodes, 2010). Electronic portfolios provide faculty with the means to track a students' development and progression at various stages throughout the students' academic career (Wang, 2009). These advantages allow for a more comprehensive view of the students' accomplishments, achievements, professional and personal development, and academic progress while enrolled in a program (Garrett, 2011; Rhodes, 2010; Wang, 2009).

Electronic portfolios also serve as a marketing tool for potential employers (Wang, 2009). Students can present an electronic portfolio to future employers to demonstrate not only their accomplishments in their coursework, but also their technology skills (Rhodes, 2010; Wang, 2009).

Universities and colleges throughout the nation are incorporating electronic portfolios into their teacher education programs to meet the standards and requirements of various accreditation agencies such the North Central Association of Colleges and Schools (NCACS), National Council for Accreditation of Teacher Education (NCATE), National Education Technology Standards (NETS), and International Society of Technology in Education (ISTE) (Garrett, 2011; Ntuli et al., 2009; Tubaishat et al., 2009; Wang, 2009). To accomplish the task of meeting these standards, many universities and colleges employee technology such as LiveText or other software to provide a platform

for the creation, editing, viewing, assessment, storing, and transmission of student

electronic portfolios (Rhodes, 2010). The use of multiple technologies or software to

meet the needs of the course and academic standards can prove overwhelming to faculty

and result in a decrease in the utilization of technology overall (Daniels, 2009; Jarrahi,

2010). The inclusion of an electronic portfolio feature/tool in an LMS has many potential

benefits including reducing overall technology costs at institutions, because they no

longer have to purchase multiple technologies/software licenses, reducing the amount of

time faculty are required to devote to training in learning to utilize the various

technologies, providing a platform for comprehensive student assessment, and increasing

learning outcomes and objectives for students (Jarrahi, 2010; Garrett, 2011; Rhodes,

2010; Wainwright, Osterman, Finnerman, & Hill, 2007; Wang, 2009). These benefits

could reduce faculty reluctance in utilizing technology in their courses, and increasing the

utilization of an LMS.

LMS use in traditional and blended courses.

Faculty often utilize the features/tools in an LMS to enhance and supplement their

course content and materials in traditional classroom based courses (Keesee & Shepard,

2011). According to Morgan (2003) "Just over 80 percent of those surveyed use a CMS

in regularly scheduled face-to-face classes, compared to just 27 percent who use a CMS

to teach fully online classes" (p. 4).

Bento and Bento (2000) identified three features, that require only minimal

technological knowledge and skills, which can enhance traditional face-to-face

instruction: "using a web browser to access materials and resources; using web-boards

and chatrooms for interaction; and using familiar word processing and presentation
software to create and post web documents and presentations" (Bento & Bento, 2000,
Discussion section, para. 2).

Some faculty utilize the features/tools in an LMS to distribute documents, post
additional resources for students, encourage and facilitate interactive collaboration
between students, evaluate/assess student performance, and record grades in a traditional
classroom based course (Jafari et al., 2006; Sands, 2002). Faculty often find the use of
features/tools in an LMS can help reduce time spent producing and reproducing course
materials for distribution to students in their face-to-face courses (Alias & Zainuddin,
2005).

An LMS can provide flexibility, to both faculty and students, in structuring the
way in which class meetings are conducted (Graham & Kaleta, 2002). With the use of an
LMS, faculty have the ability to conduct class from virtually anywhere without being
confined within the walls of a classroom. Students are able to access course documents,
watch multi-media presentations, take quizzes and exams, collaborate with other students
in the class, complete and submit assignments, and view their grades practically anytime
from anywhere (Daniels, 2009; Landry et al., 2006; Parker & Ingram, 2011).

Faculty are beginning to utilize the LMS as more than just an electronic filing
cabinet for the storing and distribution of course materials in a face-to-face course
(Morgan, 2003). As their level of comfort using the features/tools in an LMS begins to
rise, so does their interest in using other features/tools in their courses.

Communication is another function provided by many LMSs today. While the features/tools may vary from LMS to LMS, most have the capability of facilitating communication between the members of the course (Daniels, 2009). Whether sending emails, responding to postings on a discussion board, wiki or blog, or chatting online, the LMS can foster and encourage open communication by all. Students no longer have to wait until a class meeting to get answers to questions or discuss a project with a classmate — now conversation is just a click away.

Interactive communication tools can provide an environment that supports and encourages collaborative work (Parker & Ingram, 2011). In addition to encouraging collaboration and teamwork, LMSs can promote digital literacy and digital citizenship. Students now have access, through the utilization of an LMS, to a variety of tools that will allow them to work collaboratively on assignments and projects including wikis, blogs, and chats (Woods et al., 2004).

LMS use in online, e-learning, and distance courses.

Another key benefit used to promote the utilization of an LMS to faculty by administration is the ability of one product to deliver multi-modal instruction. An LMS is often used to enhance or augment traditional face-to-face classroom based activities, but can be used in blended courses, online courses, and for distance learning (Beatty & Ulasewicz, 2006; Lewis et al., 2011; Lonn, Teasley, & Krumm, 2011). The multimodal capabilities of an LMS allows faculty to create course content that can be distributed in multiple courses without creating extra work for the faculty member (Daniels, 2009). A

multi-modal approach provides the faculty with the ability to teach multiple courses and/or multiple sections of courses at the same time.

Online, e-learning, and distance/distributive courses are becoming commonplace as a method of course delivery at many universities and colleges worldwide (Jarrahi, 2010). With the capabilities and flexibility provided to faculty and students, the use of an LMS to create a blended learning environment can has greatly increased (Ocak, 2011).

Students are no longer required to be in close geographical proximity to participate in courses offered by a particular institution (Lonn et al., 2011). Increased access provided by the delivery of courses through an LMS can result in increased diversity and incorporate a multi-culture perspective in courses today (Hannon & D`Netto, 2007; Merryfield, 2003). Woods, Baker, and Hopper (2004) reported that faulty felt students were more willing to express themselves and their ideas in online environment as opposed to a face-to-face setting. This allows more diversity in the thoughts and opinions that are expressed by students in the course.

Assessment is another benefit that can be gained from the use of the features/tools in an LMS (Lansari et al., 2010; Lewis et al., 2011). Faculty can post assignments, quizzes, exams and surveys which student can complete and/or submit through the LMS (Lewis et al., 2011; Vovides et al., 2007). An LMS affords faculty the ability to create, collect, grade and record various types of assessments for multiple students with minimal effort or time required for many of these processes.

Students are afforded the benefit of viewing and completing these assessments at a time that is convenient for them. This allows for more self-directed/self-regulated learning on the part of the student (Mortera-Gutierrez, 2006; Ocak, 2011).

Finally, use of an LMS can provide a medium which faculty can use to create differentiated or diversified learning activities for the students. Multiple features/tools, available is most LMSs, provide faculty with various format options for delivering course content and materials (Graf et al., 2010; Ocak, 2011). Research related to learning styles has been ongoing for decades (Graf et al., 2010; Rogers, 2000). Educators are constantly looking for opportunities to improve and enhance the learning experience for all students.

Individualized or differentiated instruction can be time consuming and exhaust an instructor's resources in the best of situations. Increased diversity in courses and lack of face-to-face interaction made possible through the utilization of an LMS, has forced educators to re-evaluate the processes they use to identify the learning styles of the students, and how they design and implement differentiated learning (Morgan, 2003). Faculty are able retrieve statistics reports generated by Blackboard that allow them to determine what content and resources are being utilized most often and by which students (Blackboard, 2011; Fritz, 2011). Information gained about what resources students are using most often, provides insight to the faculty about student learning preferences (Franzoni & Assar, 2009; Graf et al., 2010).

Graf et al. (2010) stated " Providing students with learning material and activities that fit their preferred ways of learning can make learning easier for them" (p. 3). Utilizing the multiple features/tools available to instructors in Blackboard allows faculty

to design and deliver instruction in various formats (McCabe & Meuter, 2011). Providing the students with multiple modes of communication allows for collaborative learning and the exchange of feedback between the students (Cifuentes et al., 2011; McCabe & Meuter, 2011). Students can access the content in the format or a combination of formats best suited to their learning preferences (Graf et al., 2010; Landry et al., 2006).

Barriers Leading to Underutilization of an LMS in Higher Education Institutions

As previously stated in this literature review, the success of an LMS is highly dependent upon the use of the LMS by faculty. Often the decision of which LMS is implemented at an institution is influenced by the features/tools and benefits offered by the LMS. Vovides, Sanchez-Alsonso, Mitropoulou, and Nickmans (2007) state ". . . the features and functions that have been built into these systems are often underutilized" (p. 64). In their 2004 study, Woods et al. reported

> The results indicate that faculty primarily use blackboard as a course
> management/administration tool to make course documents available to students
> and manage grades. Few faculty used blackboard for instructional or assessment
> purposes and even fewer utilized blackboard to foster a more positive sense of
> community within their face-to-face classes. (Abstract section, para. 1).

Research suggests that faculty cite many reasons for utilizing only some or none of the features/tools that are available in an LMS at their institution (Jarrahi, 2010; Lewis et al., 2011; West et al., 2007). The most common reason for the underutilization of an LMS by faculty, which has emerged during this literature review, is limited or lack of training.

Faculty indicated that a major factor in their decision to utilize an LMS is whether or not they have received training in the use of the LMS (Morgan, 2003; Woods et al., 2004).

According to their study in 2004, Woods et al. reported that of 862 faculty members who participated "an overwhelming majority (83%) received Blackboard training or assistance" (p. 285). The same study reported that when asked about their motivations to begin using Blackboard ". . . 39% as a result of attending a training class" (p. 285). These results indicate there is a need to ensure proper training programs are in place and are widely available to all faculty members at the institution. Rogers (2000) stated in her article, "training and technical support is critical, yet most faculty have little formal training on how to make effective use of IT resources in their instructional and scholarly work (Barley, 1999; Parker, 1997)" (p. 21). When faculty struggle with the use of an LMS due to limited training and understanding of the technology, they are more likely to discontinue use of the product (West et al., 2007).

Design and implementation of training programs are major components in the institutional support of the LMS. Training in the use and functionality of the technology is crucial particularly for faculty whose disciplines are not related to the use of technology (Jarrahi, 2010; Vovides et al., 2007). Faculty cite the inability to convert their current face-to-face course design to an online or electronic environment as being a hurdle in using an LMS (Alias & Zainuddin, 2005; Mortera-Gutierrez, 2006). Providing faculty with access to course design training can improve not only utilization of the LMS, but also improve the pedagogical properties of the instruction.

Loss of face-to-face interaction can be another reason for faculty's hesitation to utilize the features/tools of an LMS in their courses (Ocak, 2011; Woods et al., 2004). Traditional face-to-face structured courses provide faculty with the opportunity for personal interaction with the students. During face-to-face interactions with students faculty evaluate multiple factors which help them determine if the students are comprehending the instruction being delivered, and if the students are actively engaged in the learning process. Faculty can utilize the features/tools provided in an LMS to obtain this information (Govindasamy, 2001; Lewis et al., 2011). Providing training to assist faculty in designing their courses to meet their learning outcomes and course objectives in an electronic environment will help promote a better understanding and utilization of the LMS.

Social presence is typically a non-issue in traditional face-to-face courses. In this study, social presence is defined as the perceived awareness of others achieved through communications and interactions among members of a group or community (Gunawardena, 1995). The faculty/instructor is commonly present in the classroom during the scheduled meeting times, and delivers instruction while employing the appropriate classroom management techniques to provide an environment conducive to learning. This provides the faculty the opportunity to encourage and supervise interactions between the students helping to create a social presence (McCabe & Meuter, 2011).

Some faculty members have expressed their concern regarding an inability to establish and maintain a social presence in an online course (Ocak, 2011; West et al.,

2007). Blackboard has a variety of features/tools that faculty can incorporate into their

online courses to help create and maintain a sense of social presence (Parker & Ingram,

2011; Woods et al., 2004; Yueh & Hsu, 2008). Utilizing the features/tools available in

most LMSs today, faculty have a variety of formats to establish and maintain a social

presence in their blended and online courses. Woods et al. (2004) stipulated:

> Many online instructors build a sense of connectedness and social presence in
>
> online courses through verbal and nonverbal (textual) immediacy behaviors
>
> (Baringer & McCroskey, 2000; Vrasidas & McIsaac, 1999), which, in turn, may
>
> be experienced vicariously by students in the learning process (LaRose &
>
> Whitten, 2000). (p. 283).

Rogers (2000) stipulates faculty can use various tools in an LMS to promote and increase

interactive communications such as email, chats, mediate discussion boards, and

immediate feedback to students. Parker and Ingram (2011) contended that through the

use of collaborative communication tools, faculty can create and manage positive

learning environments. According to the findings reported by Yueh and Hsu (2008),

through the use of Blackboard "About 80% of professors felt that their interaction with

students had increased . . ." (p. 62). These findings suggest, that when use appropriately,

Blackboard features/tools are an effective means of creating a social presence in an

online environment.

     Time can be a deterrent for faculty in the utilization of an LMS. Lewis, Baker,

and Britigan (2011) suggested that some faculty are reluctant to design their courses

utilizing technology due to the amount required to accomplish this task. Building a course

in an LMS can be a time-consuming venture depending on the course design employed,

the amount of course content create and posted, and the level of activities and interactions

utilized in the course by the instructor (Parker & Ingram, 2011). In their 2007 study, West

et al. reported one instructor as having stated "It takes me 20-30 hours to set up a

Blackboard site at the beginning" (p. 15). Many faculty are hesitant to expend large

amounts of time to design their courses in Blackboard (Parker & Ingram, 2011; West et

al., 2007).

Typically, faculty will reap the benefits in the long term, because the same

materials, content, assessments, and presentations can be used more than once. Having

the ability to re-use the same materials for multiple courses and/or multiple sections of a

course can be a time saving benefit of designing a course utilizing an LMS (Alias &

Zainuddin, 2005). Once faculty understand the efficiency benefits offered by using an

LMS, they are more likely to expend the upfront time involved in the initial course design

using an LMS (West et al., 2007).

Not only is the time involved in the initial course design in an LMS a concern for

faculty, but time spent moderating synchronous and asynchronous communications and

activities are common among faculty (Lewis et al., 2011; Ocak, 2011; West et al., 2007).

Some faculty have expressed concerns regarding the time requirement not only

for initial training in the use of an LMS, but in keeping current with the advances in

technology and newer features/tools that may be incorporated into the LMS in the future

(Lewis at al., 2011; Ocak, 2011; West et al., 2007). One concern is that this time

commitment may limit the amount of time they have for instructional activities and/or

staying current with advances and developments in their respective fields of study.
Rogers (2000) proposed that properly structured and implemented training programs,
offering sessions on a regular basis, can help reduce the time spent by faculty trying to
understand new technologies and/or LMS upgrades.

Intellectual property concerns may give pause to faculty who are considering the
utilization of an LMS (Jarrahi, 2010). In their study, Lewis et al. (2011) reported "Eighty
percent of instructors self-reported that they understood the intellectual property rights
pertaining to their online course materials, but only 30% of them had checked and cleared
their online materials for the copyright infringements" (p. 57).

Copyright of one's own work can also be a source of concern for faculty when
posting self-generated materials in an online environment. Providing faculty with access
to training that incorporates Fair Use and Copyright regulations and laws relating to use
of technology will enable faculty to make informed decisions when creating and
implementing course content when utilizing an LMS.

A perceived change in faculty's role and responsibilities may influence their
decision not to utilize an LMS to its fullest potential. Many faculty have adopted a
particular instructional style, and the utilization of an LMS may require faculty to re-
evaluate and alter or change their instructional practices. Jarrahi (2010) indicated in his
study, "Some professors believe that teaching is formed around the teacher and the
classroom and technologies like CMSs would introduce bureaucracy and standardization
into the teaching system" (p. 262). Ocak, (2011) noted in his study that faculty perceived

that the use of an LMS required them to be well-informed in the use of technology in addition to being a subject matter expert and an effective educator.

These perceptions may account for the underutilization of an LMS by some faculty. Whether it is loss of autonomy or academic freedom or the need to become proficient in the use of technology, these factors are concerns to faculty. Training to educate faculty in use of the technological aspects of the LMS as it relates to their course may help quell some faculty fears and frustrations (Rogers, 2000).

Assistance with course design and implementation utilizing an LMS will allow the faculty to gain better understanding of their control of instructional activities in their courses. When faculty understand the purpose of an LMS is to enhance and assist them with their course design, implementation and management, and not to dictate or control the aforementioned processes, utilization of the LMS is more likely to occur or increase (Stoltenkamp et al., 2007).

Many of the factors previously mentioned are shared and expressed by faculty at various institutions. These factors or a combination of these factors may contribute to the underutilization of an LMS to enhance or augment course related activities in traditional face-to-face based classrooms, or prevent faculty from utilizing an LMS to deliver blended or completely online instruction. Much of the research suggests that many of these concerns can be addressed through proper institutional support of the LMS and the members of the university community engaged in the use of the LMS (Jarrahi, 2010; McCabe & Meuter, 2011; Morgan, 2003; West et al., 2007). A main component of the

support system at any institution should be a well-designed and implemented training program.

Research suggests that a comprehensive program should include training in the use of the technology; pedagogical standards and implications for the use of an LMS; and techniques for designing, implementing, managing, and assessing effective course content, instructional activities, and collaborative exercise using an LMS (Lewis et al., 2011; Rogers, 2000; Stoltenkamp et al., 2007; Vovides et al., 2007; West et al., 2007). These training programs should be available throughout the institution and sessions should be offered on a regular basis. Vovides et al. (2007) concluded, "Training and support is absolutely essential if instructors are expected to develop and implement CMSs as powerful learning tools" (p. 72).

Summary

The increased demand for courses delivered electronically is prompting many higher education institutions to employ one or more technologies to facility multimodal course delivery (Daniels, 2009; Sloan Consortium, 2010). Learning Management Systems (LMSs) are among the more popular form of technology utilized to achieve multimodal course delivery today (Graf et al., 2010; Morgan, 2003).

Many LMSs incorporate a variety of features/tools to assist facility with designing and implementing course content and material, course management tasks, storing and distribution of information and materials, student assessment and evaluation, encouraging and facilitating collaboration among students, prompting digital literacy and citizenship, providing synchronous and asynchronous communication, and providing students with

virtually 24 hour access to learning (Alias & Zainuddin, 2005; Chawdry et al., 2011; Henninger & Kutter, 2010; Jafari et al., 2006; Landry et al., 2006; Lonn & Teasley, 2009; McCabe & Meuter, 2011; Morgan, 2003;Vovides et al., 2007; West et al., 2007). Faculty can utilize an LMS to (a) enhance, augment, or supplement their face-to-face courses; (b) provide a blended learning environment to students; or (c) deliver their courses entirely online (Beatty & Ulasewicz, 2006; Lewis et al., 2011; Lonn et al., 2011).

University administrators and decision-makers must consider many aspects when selecting and implementing an LMS at a higher education institution including the cost-to-benefit ratio of an LMS, the ability of the LMS to meet the needs of the institution, faculty, and students, and the cost and resources required to implement and support the LMS (Daniels, 2009; Kessee & Shepard, 2011; Lewis et al., 2011; Tella, 2011).

Evaluation of the LMS is an ongoing process and should include various members of the university community (Tella, 2011). Satisfaction surveys should be conducted with all users of the LMS to ensure that the continued of the LMS is appropriate and desired. Information germane to the designing and implementation of LMS training programs should be gathered from the users to ensure the training programs is meeting the needs of the users (Rogers, 2000).

Many universities and colleges employ the use of technology or software to create an electronic portfolio, providing students with a platform for the creation, editing, viewing, assessment, and transmission of a collection of student work (Garrett, 2011; Rhodes, 2010; Wang, 2009). The inclusion of an electronic portfolio feature/tool in an LMS has the potential of decreasing the number of various technologies faculty need to

employ to meet the learning needs of their students while maintaining academic standards necessary for accreditation purposes (Jarrahi, 2010; Garrett, 2011; Rhodes, 2010; Wainwright et al., 2007; Wang, 2009). This could result in an increase in likelihood of utilization of an LMS by faculty.

Although there are benefits associated with the use of an LMS, there are also many barriers to using an LMS. Faculty cite lack or absence of training; loss of personal interactions with students; concerns about time requirements for LMS training, time spent designing, implementing, facilitating, assessing, and maintaining course related activities and assignments when using an LMS; concerns over intellectual property rights; and the inability to integrate technology into their courses (Alias & Zainuddin, 2005; Jarrahi, 2010; Lewis et al., 2011; McCabe & Meuter, 2011; Morgan, 2003; Ocak, 2011; Parker & Ingram, 2011; West et al., 2007; Woods et al., 2004; Yueh & Hsu, 2008). There sentiments and concerns are shared by many faculty across various disciplines at multiple higher education institutions.

Many of the above mentioned fears and concerns can be properly addressed with well-designed and managed training programs (Ocak, 2011; Rogers, 2000; Woods et al., 2004). The training must be designed to meet the needs of the users of the LMS and should be offered on an on-going basis at the institution. Evaluation of the appropriateness and effectiveness of the training programs will provide valuable information to assist in designing future training for the institution (Rogers, 2000; Morgan, 2003; Stoltenkamp et al., 2007; Vovides et al., 2007; West et al., 2007).

Chapter 3: Methodology

This study utilized a descriptive research design to investigate the utilization of Blackboard by faculty engaged in teaching courses during the 2011 summer quarter at a large Midwestern university. This study sought to determine if the utilization of Blackboard for course related activities and/or assignments is independent of campus affiliation and to identify which Blackboard features/tools faculty commonly utilize in their courses. Finally, this study sought to gain a better understanding of barriers to the utilization of Blackboard commonly experienced by faculty.

Research Design

In an attempt to gain a better understanding of utilization of Blackboard by faculty, a descriptive research design was employed for this study. The descriptive method was selected for use in this study, because the goal was to obtain information regarding faculty use of Blackboard's features/tools for course related activities and/or assignments. Best and Kahn, (1998a) states:

In carrying out a descriptive research project, in contrast to an experiment, the researcher does not manipulate the variable, decide who received the treatment, or arrange for events to happen. In fact, the events that are observed and described what have happened even if there had been no observations or analysis (p. 114).

Research Questions

The purpose of this study was to provide a better understanding of the level of utilization of the Blackboard LMS at a Midwestern university. A researcher-developed survey was employed to collect data about the following questions:

R1: Is the utilization of Blackboard by faculty for their course related activities and/or assignments independent of campus type affiliation?

R2: Which Blackboard features/tools are commonly utilized by faculty for their course related activities and/or assignments, and is likelihood of increased Blackboard utilization based on the addition of an electronic portfolio?

R3: What are the barriers to utilizing Blackboard commonly expressed by faculty?

Sample Population

The population for this study is the faculty at a large Midwestern university who were engaged in teaching courses during the 2011 summer quarter. The faculty e-mail addresses were obtained from the university's Test Score Office, and addresses were compiled based on faculty members with active contracts for the 2011 summer quarter. Due to the implementation of new software at this Midwestern University, it was not possible to determine the campus affiliation of the potential participants because the Test Score Office could not generate a list of faculty email based on or identifying campus affiliation. Qualtrics version 21521, a web based survey tool, was used to construct and distribute an email containing information about the purpose of this study and included a link to the online survey for this study.

Of the 1359 emails sent out, 39 faculty members responded with an email stating they were ineligible for participation in this study, because they were not actively teaching courses during the 2011 summer quarter. These 39 faculty members' email addresses were removed from the pool of potential participants.

Two hundred and seventy-two viable surveys were returned for a response rate of 21%. Of the 272 faculty that completed the survey, 136 or 50% were male and 136 or 50% were female. The even distribution of gender was by chance as there was no gender classification obtained when the list of faculty was generated.

Research Instrument

Design of Research Survey

Permission to conduct the study was obtained from the Institutional Review Board (Appendix A: IRB approval). The online survey contained an Informed Consent Statement for participation in the study (Appendix B: Informed Consent Statement).

A researcher-developed survey (Appendix C: Survey) was utilized as the research instrument for this study. According to Best and Kahn (1998a), "the survey method gathers data from a relatively large number of cases at a particular time" (p. 115). A survey is an appropriate instrument to use when conducting a study using a descriptive research design (Best & Kahn, 1998a). The survey was designed to collect data relevant to the utilization of Blackboard features/tools by faculty members. The features/tools available in Blackboard version 9.0, which is the primary LMS used university-wide, were addressed in the construction of the survey.

Qualtrics version 21521, a web-based survey tool, was used to construct and distribute the survey, and collect the responses of the participants. The researcher-developed survey was constructed to obtain information about faculty demographics, frequency of use of common Blackboard features/tools and electronic portfolios,

attendance at Blackboard workshops, and common barriers to use of Blackboard experienced by faculty.

The survey contained a total of 23 items, with similar items grouped together in the same question. The survey contained four different types of questions: (1) demographic information, (2) frequency of use of Blackboard features/tools and likelihood of increased Blackboard utilization based on the addition of an electronic portfolio, (3) Blackboard workshops attendance, and (4) one open-response question regarding common barriers to the utilization of Blackboard as experienced by the faculty.

Section 1: Demographic information

According to Parker and Ingram (2011) perception of technology usefulness varies from person to person. Two demographic questions were included in the survey. These two questions were designed to determine the gender of the faculty and if the faculty's courses were primary taught through the Midwestern University's main campus or a regional campus. The data collected for these two questions provided information about the utilization or non-utilization of Blackboard features/tools based on gender and campus affiliation.

Section 2: Frequency of utilization of Blackboard features/tools and the likelihood of increased Blackboard utilization based on the addition of an electronic portfolio.

Features/tools built into an LMS are often underutilized by faculty (Jarrahi, 2010; Morgan, 2003; Vovides et al., 2007; West et al., 2007). This portion of the survey consisted of six questions with a total of sixteen items. These questions were designed to

collect data regarding the frequency of use of some of the features/tools included in

Blackboard for faculty use. For these items, a frequency of use scale ('Never,'

'Sometimes,' 'Always') was used as the possible responses. This study sought to

determine if faculty were utilizing any of the features/tools available in Blackboard. To

avoid any potential misunderstanding by the participants as to the meaning of 'use of

Blackboard,' the researcher asked about the utilization of many of the features/tools in

Blackboard.

Electronic portfolios are increasing being utilized in higher education institutions,

providing students a tool for the collection, storage, and transmission of their

assignments, projects, presentations, writings, and assessment (Garrett, 2011; Rhodes,

2010; Tubaishat et al., 2009; Wang, 2009). The survey contained one question and

provided a five point Likert scale, ranging from 'Very Unlikely' to 'Very Likely,' for the

response options. This question was designed to determine whether or not the addition of

an electronic portfolio tool in Blackboard would potentially increase the utilization of

Blackboard by faculty in their courses.

Section 3: Blackboard workshop attendance.

Training in the use of an LMS as well as incorporating technology into their

course design can improve the utilization of an LMS by faculty (Morgan, 2003; Rogers,

2000; West et al., 2007; Woods et al., 2004). This question, containing a yes or no

response option, was designed to determine whether or not the faculty member had

attended a Blackboard workshop during the 2010-2011 Academic Year. Blackboard

version 9.0 was implemented for university-wide use at this institution beginning with the

2010-2011 Academic Year. This question sought to identify if the participants had attended Blackboard workshop for the 9.0 version of Blackboard. If the participant responded with an answer of no, then another question with some possible options as to why they did not attend a Blackboard workshop was displayed. The participant had the option to provide their own brief response as to why they did not attend a Blackboard workshop.

Section 4: Open-response question regarding common barriers to the utilization of Blackboard as experienced by the faculty.

Faculty state various reasons for their underutilization or non-utilization of Blackboard features/tools in their courses (Jarrahi, 2010; Lewis et al., 2011; West et al., 2007). This portion of the survey contained one open-response question: 'If you do not utilize Blackboard for course related activities or assignments, please briefly describe why.' This question was designed to provide some common reasons why the participants are not using Blackboard for their course related activities and/or assignments. This question allows the participant to state, in their own words, the reason(s) they choose not to utilize any of the Blackboard features/tools in their courses. The data collected based on the participant's responses to this question may provide information that could be used by administrators, decision-makers, and Academic Technology staff to potentially increase the utilization of Blackboard by faculty.

Research Procedure

Data Collection

A researcher-developed, self-report online survey (Appendix C: Survey) was used to collect the data in this study. The survey was constructed using the web-based survey tool Qualtrics version 21521. An email containing information about the study and a link to the online survey was sent to faculty in engaged in teaching courses during 2011 summer quarter at a Midwestern university.

Qualtrics version 21521 assigns a unique identifier to each individual link contained in the email sent to potential participants (Qualtrics, 2011). This unique identifier allows Qualtrics to determine which potential participants have completed the survey, and send reminder emails, at five day intervals, to those who had not completed or only partially completed the online survey while maintaining the anonymity of the potential participants and respondents. A link to the online survey was included in the reminder emails, and the survey was available to faculty for fourteen days.

The survey contained an Informed Consent Statement (Appendix B: Informed Consent Statement) which indicated that their participation in this study was voluntary, and they had the right to either answer or not answer any or all of the questions. The survey was designed to only display one question at a time. Even if the participant chose not to answer any or all of the questions, they were required to click the 'Next' button to get to the next question. This feature prevented participants who chose not answer any or all questions from receiving reminder emails for incomplete surveys.

The survey contained five types of questions: (1) demographic information, (2) frequency of use of Blackboard features/tools and is likelihood of increased Blackboard utilization based on the addition of an electronic portfolio, (3) Blackboard workshop attendance, and (4) one open-response question regarding common barriers to the utilization of Blackboard as experienced by the faculty.

Data Analysis

The Statistical Package for Social Science (SPSS) for Windows, version 19.0 was used to analyze the data collected. Nonparametric descriptive statistics including mode, frequencies, percentages, and Chi-square (χ^2) test for independence for two nominal variables were calculated to interpret the data collected. The results of data analysis were reported using descriptive statistics including, mode, frequencies, and percentages. According to Best and Kahn (1998b), ". . . descriptive analysis provides valuable information about the nature of a particular group of individuals" (p. 340).

 A Chi-square test of the independence of two nominal variables using an alpha level of 0.05 and one degree of freedom was performed to determine if the utilization of Blackboard by faculty was independent of campus affiliation. David Howell (1982) asserted ". . . use of a Chi-square deals with the situation in which we have two variables and want to determine if these variables are independent of one another" (p. 97). In this study, the two variables for which the research is attempting to determine independence for are faculty utilization of Blackboard and campus affiliation.

Because of unequal sample sizes, main campus 210 and regional campuses 62, the Chi-square tests of independence was determined to be appropriate to employ for data

analysis. According to Aron, Coups, and Aron (2011a), "Chi-square tests make no assumptions about normal distributions of their variables . . ." (p. 402). Since a Chi-square test was utilized for data analysis no further tests to normalize the data was used.

Due to the disproportionate sample sizes, main campus 210 and regional campuses 62, the Chi-square test for independence was performed three times to confirm the results. The random number generator in SPSS for Windows version 19.0 was used to generate random numbers for the 210 surveys from faculty affiliated with the main campus. For each Chi-square test, 62 cases (surveys) from the main campus sample were randomly selected by SPSS and compared to the 62 cases (surveys) from the regional campus. The 62 cases (surveys) were replaced in the main campus sample and another 62 cases (surveys) were randomly selected by SPSS and compared to the 62 cases (surveys) from the regional campus. This process was completed three times providing three different Chi-square tests for independence using an alpha level of 0.05 with 1 degree of freedom.

Post-hoc analysis of the data was conducted using a Chi-square test for independence for two nominal variables using all 272 cases. An alpha level of 0.05 and 1 degree of freedom was set for the post-hoc Chi-square test. Phi correlation coefficient (ϕ) was conducted post-hoc to measure the relationship between the two variables (campus affiliation and Blackboard utilization). According to Best and Kahn (1998b), "The Pearson product-moment correlation, when both variables are dichotomous, is known as the phi coefficient" (p. 372).

Summary

This chapter provides information related to the proposed methods and procedures employed in this study. A descriptive research method was utilized for this study. A researcher-developed survey was designed and distributed using Qualtrics version 21521 to collect the data in this study. The method for obtaining the sample population for this was presented in this chapter. SPSS for Windows version 19.0 was used to analyze the data and produce statistical results in the form of nonparametric descriptive statistics and Chi-square test for independence tables.

The post-hoc statistical analysis of the data was described. The information contained in this chapter is directly related to the research questions and were informed by the information stated in Chapter 2.

Chapter 4: Analysis of the Data

The primary purpose of this study is to gain a better understanding of the utilization of Blackboard by faculty at a Midwestern university. This study sought to gain information about which features/tools in Blackboard are most commonly utilized by faculty for their course related activities and/or assignments, if the addition of an electronic portfolio tool in Blackboard would increase the likelihood of Blackboard utilization by faculty, and some of the common barriers to utilizing the features/tools in Blackboard as reported by the faculty.

This chapter provides information related to the data collection procedure, demographic data analysis, research question analysis, open-response question results, and chapter summary.

Research suggests that many features/tools in an LMS, are often underutilized by faculty for their course related activities and/or assignments (Govindasamy, 2001; Jarrahi, 2010; West et al., 2007; Woods et al., 2004). Because the perception of the usefulness of technology varies from person to person (Parker & Ingram, 2011), this study sought to identify if the utilization of Blackboard varied based on campus affiliation. Research suggests that the most commonly used features/tools in an LMS by faculty are course management tools such posting course documents, distributing documents and information, and the grade center (Jarrahi, 2010; Morgan, 2003; Tella, 2011; Vovides et al., 2007). Finally, research suggests that poor quality or a complete absence of training may influence the underutilization of an LMS by faculty (Morgan, 2003; Ocak, 2011; Rogers, 2000).

Because the purpose of this study is to gain a better understanding of the behaviors of a particular group of individuals, a descriptive research design was employed (Best & Kahn, 1998a).

Data Collection Procedures

Data collected included: (1) demographic information, (2) frequency of use of Blackboard features/tools and is likelihood of increased Blackboard utilization based on the addition of an electronic portfolio, (3) Blackboard workshop attendance, (4) open-response question regarding common barriers to the utilization of Blackboard as experienced by the faculty (Appendix C: Survey).

An email providing information about the study and a link to an online survey was sent to 1359 faculty members at Ohio University. A list of the faculty email addresses was obtained from the university's Test Score Office based on faculty members with an active contract for the 2011 summer quarter. Of the 1359 emails sent out, 39 faculty members responded with an email stating they were ineligible for participation in the study as they were not actively teaching courses during the 2011 summer quarter. These 39 faculty members were removed from the pool of potential participants, leaving a total of 1320 potential participates for this study.

Data was collected using Qualtrics, an online survey tool. The survey was active for a period of two weeks. Of the 1320 potential participants, 286 surveys were completed, but only 272 surveys could be used for data analysis providing a response rate of 21%. Fourteen surveys were returned with only demographic information and were not valid for data analysis.

In an effort to encourage participation by the faculty members in this study, the survey questions were not forced answer questions, meaning they were not required to answer each question. This resulted in missing data on some of the surveys. A total of 89 data were missing from the 272 surveys returned. Close examination of the surveys with missing data determined the questions which were not answered pertained to the utilization of one or two particular features/tools of Blackboard. The missing data did not impact determining utilization of Blackboard, because each survey with missing data had a response indicating use of at least one feature/tool in Blackboard (or the respondent indicated they did not use Blackboard at all). The surveys contained enough information to determine utilization of Blackboard even with missing data. The data collected in this study was analyzed with the use the Statistical Package for Social Sciences (SPSS) for Windows Version 19.0.

Demographic Data Analysis

The demographic portion of the survey contained question related to the following: (1) gender; and (2) campus affiliation through which they primary offer their courses.

Faculty gender.

Faculty were asked to identify their gender in the survey. Out of the 272 respondents, there were 136 males and 136 females (see Table 1). The males represent 50% of the respondents, and females represent 50%. This is fairly representative of the composition of faculty based on gender, both full-time and part-time, at this higher education institution. According the document Staff Statistics (2010), there were 1,089

(57%) male, full-time and part-time, faculty, and 814 (43%) female, full-time and part-time, faculty members. These numbers include all campuses.

Table 1

Distribution of Faculty According to Gender

Gender	Frequency	%
Male	136	50%
Female	136	50%
Total	272	100%

Faculty campus affiliation: main or regional.

Faculty were asked to identify which campus type they primarily provide their courses through, the main campus or a regional campus. This Midwestern University has a main campus and five regional campuses throughout the state. Of the 272 respondents, 77% or 210 respondents selected the main campus as the campus type through which they primarily offer their courses, and 33% or 62 respondents indicated their courses are primarily offered through a regional campus. Table 2 compares the distribution of faculty based on campus affiliation (main or regional).

Table 2

Distribution of Faculty According to Campus Affiliation

Campus Type	Frequency	%
Main	210	77%
Regional	62	33%
Total	272	100%

Analysis of Research Questions

R1: Is the utilization of Blackboard by faculty for their course related activities and/or assignments independent of campus type affiliation?

This research question was designed to determine if the utilization of Blackboard by faculty at a Midwestern university was independent of campus affiliation. To answer this question, faculty were asked to identify their campus affiliation and to identify their frequency of utilization of some Blackboard features/tools.

The data revealed that of the 272 respondents, 13% or 35 respondents indicated they did not utilize any of the features/tools in Blackboard for their course related activities and/or assignments. Of these 35 respondents not utilizing Blackboard, 32 indicated their courses were primarily offered through the main campus, and 3 indicated their courses were primarily offered through a regional campus. The data indicate Blackboard is well utilized by the faculty responding to the survey (87%). Table 3 compares the distribution of Blackboard utilization by faculty according to campus affiliation.

Table 3

Distribution of Faculty Utilization of Blackboard According to Campus Affiliation
N=272

Campus Affiliation/ Blackboard Utilization	Frequency	%
Main Campus Utilizes Blackboard	178	85%
Main Campus Does Not Utilize Blackboard	32	15%
Regional Campus Utilizes Blackboard	59	95%
Regional Campus Does Not Utilize Blackboard	3	5%

To determine if Blackboard utilization by faculty is independent of campus type, a Chi-square test for independence with replacement was performed three times. Responses to the survey questions in section 2 were recoded as follows: if the faculty responded with 'Never' to a question the response was recoded as 0= 'No'. If the faculty responded with answer of 'Sometimes' the response was recoded as 1= 'Yes'. If the faculty responded to a question with an answer of 'Always' the response was recoded as 1= 'Yes.' If the faculty answered all questions with 'No' in section 2 of the survey, the faculty was categorized as not utilizing Blackboard. If the faculty responded with a 'Yes' to any of the questions in section 2 of the survey, the faculty was categorized as utilizing Blackboard.

Using a Chi-square (χ^2) test for independence of two nominal variables (Blackboard utilization and campus affiliation) setting a .05 significance level with one degree of freedom, the (χ^2) critical value is 3.841 (Aron, Coup, & Aron, 2011b). Results of the first chi square test for independence indicated that Blackboard utilization and campus affiliation are not independent of each other in this population. The proportion of faculty at the main campus not utilizing Blackboard was 80% whereas the proportion of faculty at regional campuses not utilizing Blackboard was 20% [$\chi^2(1, N = 124) = 6.143, p < .05$]. Results of the phi correlation coefficient (ϕ) = 0.223 indicating a low relationship. Best and Kahn (1998b) reported a coefficient of .20-.40 indicates a low relationship.

Results of the second Chi-square test for independence indicated that Blackboard utilization and campus affiliation are not independent of each other in this population. The proportion of faculty at the main campus not utilizing Blackboard was 77% whereas the proportion of faculty at regional campuses not utilizing Blackboard was 23% [$\chi^2(1, N = 124) = 4.211, p < .05$]. Results of the $\phi = 0.184$ indicating a negligible relationship as Best and Kahn (1998b) reported a coefficient of 0.00-0.20 is negligible.

The results of the third Chi-square test for independence indicated that Blackboard utilization and campus affiliation are not independent of each other in this population. The proportion of faculty at the main campus not utilizing Blackboard was 79% whereas the proportion of faculty at regional campuses not utilizing Blackboard was 21% [$\chi^2(1, N = 124) = 5.153, p < .05$]. Results of $\phi = 0.204$ indicating a low relationship.

The results of the fourth Chi-square test for independence indicated that Blackboard utilization and campus affiliation are not independent of each other in this

population. The proportion of faculty at the main campus not utilizing Blackboard was 91% whereas the proportion of faculty at regional campuses not utilizing Blackboard was 9% [χ^2(1, $N = 272$) = 4.617, $p < .05$]. Results of $\phi = 0.130$ indicating a negligible relationship.

To further investigate Blackboard utilization by faculty based on campus affiliation, the mode (1 = 'Never'; 2 = 'Sometimes'; 3 = 'Always') of frequency of tool utilization was compared between main campus and regional campus faculty (see Table 4). The results indicated that both main and regional campus faculty are utilizing Blackboard features/tools equally for posting of syllabus, posting of course related materials, and the recording grades in the grade center with a mode of 3 for these features/tools. However, differences in the modes were noted in the utilization of Blackboard features/tools for posting links to external resources (2 Main, 3 Regional); discussion boards (1 Main, 2 Regional); assignment submission (1 Main, 3 Regional); quizzes (1 Main, 3 Regional); and posting audio or video links (1 Main, 2 Regional). The findings indicate that faculty with regional campus affiliation are utilizing more Blackboard features/tools for their course related activities and/or assignments than faculty with main campus affiliation.

Table 4

Mode for Faculty Utilization of Blackboard Features/Tools According to Campus

Affiliation

Blackboard Feature/Tool	Main Campus Mode	Regional Campus Mode
Post Syllabus	3	3
Post Course Related Materials	3	3
Post Links to External Resources	2	3
Record Grades in Grade Center	3	3
Use Wikis	1	1
Use Blogs	1	1
Use Discussion Boards	1	2
Assignment Submission	1	3
Use Quizzes	1	3
Use Exams	1	1
Use Surveys	1	1
Post Podcasts	1	1
Embed Audio/Video Materials	1	1
Audio/Videos Links	1	2
Use Virtual Classroom	1	1
Use Chat	1	1

The scale used was Never=1; Sometimes=2; Always=3

Table 4 compares the modes for faculty utilization of Blackboard features/tools according to campus affiliation.

R2: Which Blackboard features/tools are commonly utilized by faculty for their course related activities and/or assignments?

This question sought to gain a better understanding of which Blackboard features/tools faculty were most commonly utilizing to facilitate or augment their course-related activities and/or assignments. Table 5 presents the breakdown of Blackboard features/tools utilization based on the five categories features/tools were placed into for this study: (1) course management/administration including posting syllabus, posting course related materials, posting links to external resources, and recording grades in the grade center; (2) assessment and evaluation including assignment submission, quizzes, exams, and surveys; (3) collaborative workspaces including discussion boards, wikis, and blogs; (4) audio or video resources and materials including podcasts and embedding audio or video materials; and (5) interactive communication including virtual classroom and chat.

Based on the data in Table 5 the most commonly utilized Blackboard features/tools by faculty to facilitate or augment their course related activities and/or assignments are those generally used for the purpose of course management/administration. Table five presents the data for the Blackboard features/tools which the participants indicated they use either sometimes or always for their course related activities and/or assignments.

Table 5

Distribution of Faculty Utilization of Blackboard Features/Tools Grouped by Category

Blackboard Feature/Tool	Frequency	%
Course Management	220	81%
Assessment/Evaluation	120	44%
Audio/Video Resources	106	39%
Collaborative Workspaces	87	32%
Interactive Communications	30	11%

The percentages of utilization ordered from highest to lowest of Blackboard features/tools by the participants at all campuses are presented in Figure 1.

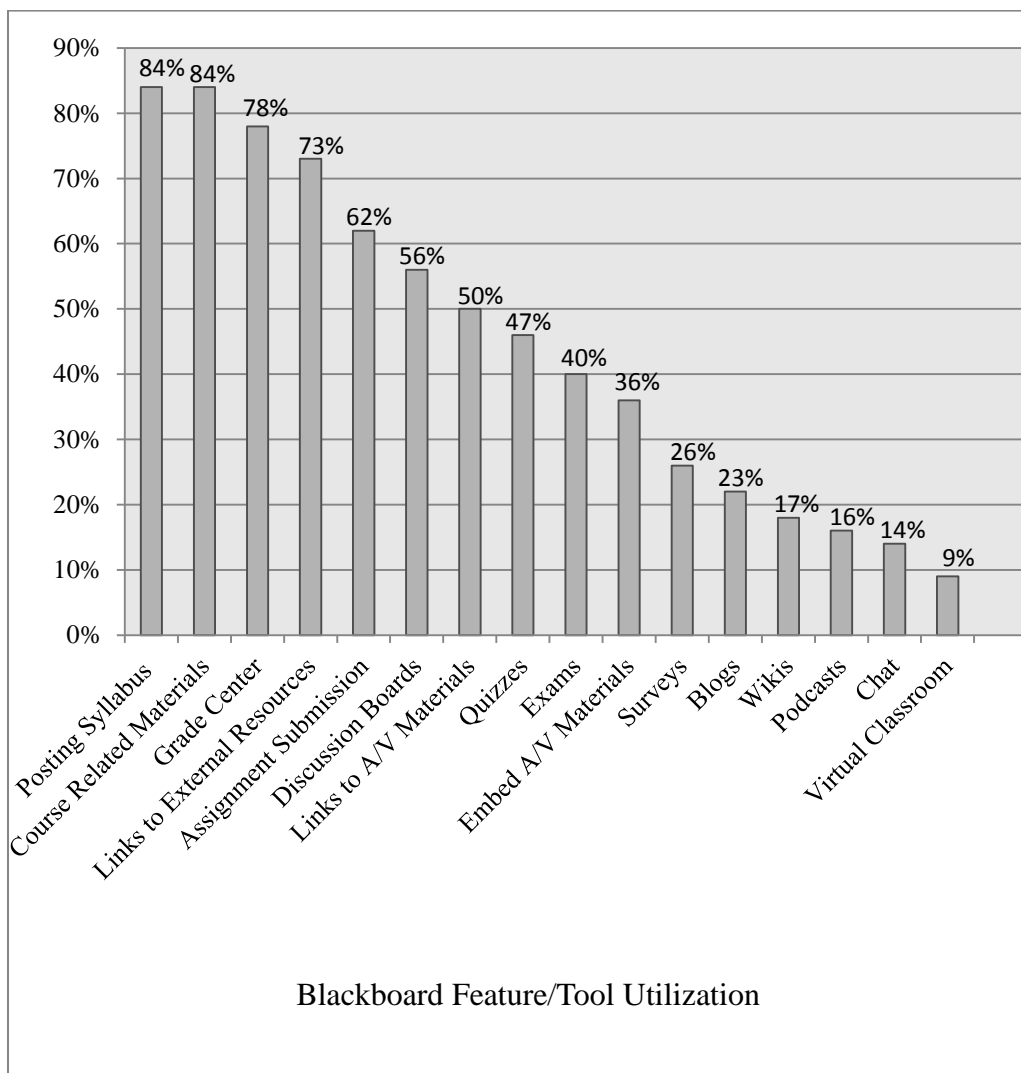*Figure 1.* Distribution of Blackboard Features/Tools by Faculty at all Campuses by Percentages.

The results of data analysis for the questions pertaining to the utilization of particular features/tools in Blackboard indicate that among the respondents, Blackboard is most commonly used for course management/administration. This means most faculty only use Blackboard to post their syllabus (84%), their course related documents (84%),

links to external course related materials (73%), and recording grades (78%). Although

the frequencies and percentage for assignment submission (62%) and discussion board

(56%) were relatively high, the use of Blackboard for assessment/evaluation (44%) and

interactive communication (11%) is greatly underutilized.

Table 6 presents the frequencies and percentages for the utilization of the

individual Blackboard features/tools by faculty at all campuses. Table 7 presents the

mode (1 = 'Never'; 2 = 'Sometimes'; and 3 = 'Always') of utilization of Blackboard

features/tools by faculty at all campuses. Based on the modes in Table 7, faculty indicate

they utilize the Blackboard features/tools associated with the category of course

management/administration including posting syllabus, posting course related materials,

posting links to external resources, and recording grades in the grade center. The mode

for the Blackboard features/tools associated with this category was 3 based on the

responses from faculty at all campuses. The mode of utilization for all other Blackboard

features/tools was 1 based on the responses from faculty at all campuses.

Table 6

Distribution of Responses Regarding Utilization of Blackboard Features/Tools

Blackboard Feature/Tool	Never	Sometimes	Always
Post Syllabus	16%	10%	74%
Post Course Related Materials	16%	19%	65%
Post Links to External Resources	27%	36%	37%
Record Grades in Grade Center	22%	16%	62%
Use Wikis	83%	14%	3%
Use Blogs	77%	17%	6%
Use Discussion Board	44%	34%	22%
Assignment Submission	38%	32%	30%
Use Quizzes	53%	22%	25%
Use Exams	60%	17%	23%
Use Surveys	74%	20%	6%
Post Podcast	84%	13%	3%
Embed Audio/ Video materials	64%	26%	10%
Audio/Videos Links	50%	34%	16%
Use Virtual Classroom	91%	8%	1%
Use Chat	86%	13%	1%

Table 7

Mode for Faculty Utilization of Blackboard Features/Tools for All Campuses

Blackboard Feature/Tool	Mode
Post Syllabus	3
Post Course Related Materials	3
Post Links to External Resources	3
Record Grades in Grade Center	3
Use Wikis	1
Use Blogs	1
Use Discussion Boards	1
Assignment Submission	1
Use Quizzes	1
Use Exams	1
Use Surveys	1
Post Podcasts	1
Embed Audio/Video Materials	1
Audio/Videos Links	1
Use Virtual Classroom	1
Use Chat	1

The scale used was Never=1; Sometimes=2; Always=3

To gain a better understanding of whether or not the addition of Blackboard features/tools influence the likelihood of faculty's increased utilization of Blackboard for course related activities and/or assignments, faculty were asked the following question: 'How likely would you be to increase your utilization of Blackboard for course related activities or assignments in future courses if an electronic portfolio tool was available in Blackboard?' Faculty were provided a Likert type scale to indicate their response. The following options were provided: (1) Very Unlikely; (2) Unlikely; (3) Undecided; (4) Likely; (5) Very Likely.

The electronic portfolio was the tool in question due to the increasing use of electronic portfolio tools by various colleges and departments at higher education institutions. The frequencies and percentage of responses were: (1) Very Unlikely- 51 respondents or 19% chose this option; (2) Unlikely- 35 respondents or 13% chose this option; (3) Undecided- 104 respondents or 39% chose this option; (4) Likely- 47 respondent or 17% chose this option; and (5) Very Likely- 32 respondents or 12% chose this option. Table 8 presents frequencies and percentages of the data collected for this question.

Based on the data, the largest group (39%) responding was undecided as to whether the addition of electronic portfolio tool is likely to increase their use of Blackboard.

Table 8

Distribution of Frequencies and Percentage of Faculty Responses for Likelihood of

Increased Blackboard Use with the Addition of an Electronic Portfolio Tool

Response	Frequency	%
Very Unlikely	51	19%
Unlikely	35	13%
Undecided	104	39%
Likely	47	17%
Very Likely	32	12%

R3: What are some of the barriers to utilizing Blackboard commonly

experienced by faculty?

Research suggests there are many reasons cited for the underutilization of an LMS

by faculty (Jarrahi, 2010; Lewis et al., 2011; Morgan, 2003; West et al., 2007). This study

sought to determine some of the common barriers to the utilization of Blackboard as

stated by the faculty. As previously stated early in this chapter, and in Chapter 2, a lack of

training may contribute to the decision to utilization only certain features/tools in

Blackboard, or to not utilize any.

To gain a better understanding of the faculty's attendance of Blackboard

workshops, the survey included the following question: 'Did you attend a Blackboard

workshop during the 2010-2011 academic year?' Faculty were given following answer

options for this question: (1) No; or (2) Yes. Of the 268 faculty responding to this

question, 83 or 31% of the respondents indicated they did attended a Blackboard

workshop, while 185 or 69% indicated they did not attended a Blackboard workshop.

Table 9 compares the breakdown of faculty who attended a Blackboard workshop

compared to faculty who did not attend a Blackboard workshop according to campus

type.

Table 9

Distribution of Faculty Attendance of Blackboard Workshops According to Campus

Affiliation

Campus Affiliation/ Blackboard Utilization	Frequency	%
Main Campus Did Not Attend Blackboard Workshop	157	75%
Main Campus Did Attend Blackboard Workshop	51	25%
Regional Campus Did Not Attend Blackboard Workshop	28	47%
Regional Campus Did Attend Utilize Blackboard	32	53%

Faculty who provided a response of 'No' to the previous question triggered the

following question: If you did not attend a Blackboard workshop during the 2010-2011

academic year; please select one of the following reasons that best describes why. Faculty

were provided with three possible responses to this question: (1) Was unaware of

scheduled Blackboard workshops; (2) Blackboard workshops were offered on dates and/or times that conflicted with my teaching schedule; or (3) Other Please Specify.

 The data collected for this question is as follows: of the 185 respondents who indicated they did not attend a Blackboard workshop, 183 responded to this question. Sixty-three respondents or 34% indicated the Blackboard workshops were offered on dates and/or times that conflicted with my teaching schedule; 20 respondents or 11% indicated they were unaware of scheduled Blackboard workshops. One hundred respondents or 55% provided the reasons for not attending a Blackboard workshop.

 Of the 100 respondents who indicated they would provide a short answer response, 92 respondents provided open-responses. These open-responses were categorized based on themes and ranked based on frequency of response, by the researcher. Table 10 presents the categorized and ordered open-responses based on frequencies and percentages.

Table 10

Distribution of Faculty Open-Responses for Not Attending a Blackboard

Workshop

Categorized Response	Frequency	Percentage
Not interested in workshops	24	26%
Do not use Blackboard	16	17%
Time conflicts	14	15%
Prefer to learn on my own	14	15%
Attended workshop in past	11	12%
Use another LMS	10	11%
Not offered on my campus	3	3%

Open-response results.

The final question faculty were asked to complete in the survey was designed for faculty who indicated they do not utilize any of the features/tools available in Blackboard. This was an open-response question allowing faculty to state in their own words why they do not to utilize Blackboard for their course related activities and/or assignments. Seventy-two respondents provided statements for this open-response question. The responses were categorized by theme and ordered according to frequency by the researcher. Table 11 presents the categorized open-responses, frequencies and percentages ordered from highest to lowest.

Table 11

Distribution of Faculty Open-Responses for Not Utilizing Blackboard

Categorized Response	Frequency	Percentage
Use another LMS	24	33%
Blackboard experiences too many technical difficulties	24	33%
Lack of technical skills	10	14%
Inability to integrate technology into course content/materials	7	10%
Intellectual Property concerns	3	4%
Too much work, time and effort to use Blackboard	2	3%
Students do not like to use Blackboard	1	1%
Prefer personal interaction	1	1%

The results of the open-responses show the two most reported reasons for not utilizing Blackboard at this Midwestern University are: (1) faculty are using another LMS (33%), (2) they perceive Blackboard as having too many technical difficulties for them to utilize the product (33%). Lack of technical skills in using Blackboard (14%) was the third most commonly stated reason. This combined with the fourth most commonly stated reason; inability to integrate technology into their course content (10%), suggests a

lack of training and/or institutional support and resources also contributes to the underutilization of Blackboard by faculty.

Other Findings

Although the survey contained a question asking the participants to identify their gender, the gender variable was only used to describe the demographics of the faculty participating in this study. A post-hoc Chi-square test for independence of two nominal variables was performed to determine if a there was a statistical significance between gender and Blackboard utilization. The results of the Chi-square test indicate no significant difference in Blackboard utilization based on gender in this study.

Summary

This chapter presented and discussed the results of statistical analysis of the data collected from 272 faculty members, engaged in teaching courses during the 2011 summer quarter, at a Midwestern university. This study sought to gain a better understanding of the utilization of Blackboard by the faculty at this Midwestern University, identify the Blackboard features/tools that are most commonly used by the faculty, and explore some common barriers in the use of Blackboard resulting in underutilization of Blackboard by faculty.

The findings of the data collected and analyzed, indicate a vast majority of the participants are utilizing, to some extent, the features/tools in Blackboard for their course related activities and/or assignments. The findings of the descriptive data and results of three Chi-square tests for independence for two nominal variables, indicate utilization of Blackboard by faculty is not independent of campus affiliation. The relationship between

the variables based on the results of the phi correlation coefficient analysis is negligible to low.

The results indicate faculty are most commonly using the features/tools available in Blackboard for storage and distribution of course related documents and materials, recording grades, student submission of assignments, and facilitating discussions boards. Results indicate faculty are underutilizing or not utilizing Blackboard due to the use of another LMS, technical difficulties experienced with the use of Blackboard, and a lack of technical skills in the use of Blackboard.

This chapter provided information pertaining to data collection procedures, analysis of demographic data, analysis of data related to the research questions and the results from the open-response question.

Chapter 5: Findings, Conclusions, Recommendations, and Limitations

Chapter five provides a summary of the statement of the problem, the methodology utilized in the study, discussions of the findings, recommendations and suggestions for future research and the limitations of the study.

Summary of the Study

Technology is rapidly becoming an integral part of our society and lives. Higher education institutions have been integrating technology into various facets of their organizations to meet the rising demands for alternative course delivery methods (Sloan Consortium, 2010). Today's students of higher education have become accustom to and reliant upon the ability to access information virtually anytime from wherever they are (Daniels, 2009; Parker & Ingram, 2011).

Many higher education institutions have implemented one or more LMSs in their organization to assist in augmenting, enhancing, and electronic delivery of courses (Govindasamy, 2001; Jarrahi, 2010; Unal & Unal, 2011). LMSs have many potential uses for these organizations including: augmenting or enhancing face-to-face classroom based courses (Jafari et al., 2006; Landry et al., 2006); facilitating the online components in blended courses (Mortera-Gutierrez, 2006; Ocak, 2011); and online course with no face-to-face classroom based components (Daniels, 2009; Parker & Ingram, 2011).

Many institutions have implemented an LMS, often at great expense in both money and resources (Jarrahi, 2010). Although these institutions encourage faculty to utilize the features/tools offered in the LMS, for the most part LMSs are underutilized (Jarrahi, 2010, Lewis et al., 2011; West et al., 2007). Faculty most commonly utilize the

features/tools in an LMS for course management/administration purposes including: posting and distribution of course related documents and materials; and recording grades for the students (Vovides et al., 2007; Woods et al., 2004).

Faculty cite many reasons for their underutilization of the features/tools in an LMS. Research suggests the most common reason for underutilization of an LMS is lack of technical skills in using the product or an inability to reconcile the pedagogical standards in their courses with using technology due to a lack of training (Morgan, 2003; Woods et al., 2004).

The purpose of this research study was to gain a better understanding of the utilization of the LMS, Blackboard, for course related activities and/or assignments by faculty. The researcher sought to determine if the utilization of Blackboard by faculty was independent of campus affiliation. The researcher sought to gain a better understanding of which Blackboard features/tools were most commonly utilized by the faculty in their courses. Finally, the researcher intended that the data collected during this study would identify some common barriers to the utilization of features/tools available in Blackboard, experienced by faculty, for the course related activities and/or assignments in their courses such that training could be offered to support increased Blackboard utilization.

Discussion of the Findings

Section 1: Demographic information

There is a great deal of research to suggest that LMSs are often underutilized by faculty at higher education institutions (Jarrahi, 2010; Lewis et al., 2011; West et al.,

2007). The results from the data collected in this study indicate a vast majority of the participants are utilizing, to some extent, Blackboard features/tools for their course related activities and/or assignments. Of the 272 respondents, 237 or 87% indicated they use one or more features/tools in Blackboard for their course related activities and/or assignments.

Based on the results of the descriptive statistics, a difference was observed in the percentages in Blackboard utilization based on campus affiliation. The percentage of faculty, whose courses are primarily offered through the main campus, utilization of one or more Blackboard features/tools for their course related activities and /or assignments was 85% while the percentage of faculty, whose courses are primarily offered through a regional campus, was 95%.

Results of the Chi-square tests for independence for two nominal variables are suggestive that the two variables (campus affiliation and Blackboard utilization) are not independent of each other. The χ^2 critical value is 3.841 for a Chi-square test for independence of two nominal variables (Blackboard utilization and campus affiliation) setting a .05 significance level with one degree of freedom (Aron, Coup, & Aron, 2011b).

Results of the first Chi-square test for independence revealed the proportion of faculty at the main campus not utilizing Blackboard was 80% whereas the proportion of faculty at regional campuses not utilizing Blackboard was 20% with a $\phi = 0.223$ indicating a low relationship between the two variables.

Results of the second Chi-square test for independence revealed the proportion of faculty at the main campus not utilizing Blackboard was 77% whereas the proportion of

faculty at regional campuses not utilizing Blackboard was 23% with a $\phi = 0.184$ indicating a negligible relationship between the two variables.

Results of the third Chi-square test for independence revealed that the proportion of faculty at the main campus not utilizing Blackboard was 79% whereas the proportion of faculty at regional campuses not utilizing Blackboard was 21% with a $\phi = 0.204$ indicating a low relationship between the two variables.

Results of the fourth Chi-square test for independence indicated that Blackboard utilization and campus affiliation are not independent of each other in this population. The proportion of faculty at the main campus not utilizing Blackboard was 91% whereas the proportion of faculty at regional campuses not utilizing Blackboard was 9%. Results of $\phi = 0.130$ indicating a negligible relationship between the two variables.

These results indicate a higher number of faculty at the main campus are not utilizing Blackboard than the faculty at regional campuses. These results demonstrate that Blackboard utilization by faculty and campus affiliation are not independent of each other, although the strength of the relationship between the two variables is negligible to low. These findings are consistent with Parker and Ingram's 2011 study in that the perceived usefulness of technology varies by person. As the perception of technology's usefulness varies from person to person, so does the utilization of the technology.

It is important to note the differences in sample sizes when viewing these results. The sample of respondents indicating their courses are primarily offered through the main campus was 210, and the sample of respondents indicating their course are primarily offered through a regional campus was 62 out of 272 total respondents. Because of

disproportionate samples sizes, the Chi-square test for independence for two nominal

variables was completed three times with the data set. Using the random number

generator feature in SPSS for Windows version 19.0, each of the 210 cases (surveys) in

the main campus sample was assigned a random number. SPSS was then used to

randomly select 62 cases from the main campus sample. A Chi-square test for

independence was then completed using these 62 randomly selected main campus cases

and the 62 regional campus cases. The 62 randomly selected main campus cases were

then replaced in the data set and another 62 main campus cases were randomly selected.

This process was completed three times.

Section 2: Frequency of utilization of Blackboard features/tools and is

likelihood of increased Blackboard utilization based on the addition of an

electronic portfolio

Woods et al. (2004) concluded "The results indicate that faculty primarily used

Blackboard as a course management/administration tool to make course documents

available to students and manage grades" (Abstract section, para. 1). The findings in this

study are congruent with the results published by Woods et al. (2004). Data analysis

revealed that faculty across all campuses at this Midwestern University most commonly

utilized Blackboard features/tools to: Post Syllabus 84% with a mode of 3; post course

related materials 84% with a mode of 3; post links to external resources 73% with a mode

of 3; and post grades in the grade center 78% with a mode of 3. These modes are based

on a 1-3 scale with 1 = 'Never,' 2 = 'Sometimes,' and 3 = 'Always.' Further analysis

indicates that when the Blackboard features/tools were broken into five categories, based

on functionality type of the features/tools, 81% of the respondents utilize Blackboard features/tools for course management/administration functions. These findings are consistent with the findings of a great deal of research indicating faculty most commonly utilize the features/tools in an LMS for course management/administration purposes (Daniels, 2009; Govindasamy, 2001; Graf et al., 2010; Morgan, 2003; Woods et al., 2004).

Faculty were asked to rate their likelihood of increased utilization of Blackboard if an electronic portfolio tool was added. Electronic portfolio tools are used by various colleges and departments at this Midwestern University. Based on the results from the analysis of the data collected from this question, faculty are neither likely nor unlikely to increase their utilization of Blackboard based on the additional of an electronic portfolio tool.

The results showed that 32% of the respondents indicated they were unlikely or very unlikely to increase their utilization of Blackboard based on the addition of electronic portfolio tool. Twenty-nine percent of the respondents reported that they were either likely or very likely to increase their utilization of Blackboard based on the addition of an electronic portfolio tool. The largest percentage of the respondents, 39% reported they were undecided as to whether or not the addition of electron portfolio would increase their utilization of Blackboard. These findings are reflective with research regarding the increasing utilization of electronic portfolios at higher education institutions (Garrett, 2011; Rhodes, 2010; Wang, 2009).

Section 3: Blackboard workshop attendance.

Rogers (2000) suggested that a cause of underutilization of technology to facilitate education may be due to a lack of training. Data was collected and analyzed in an effort to gain a better understanding of Blackboard workshop attendance by the faculty at this institution. Faculty were asked to provide a yes or no answer for whether or not they had attended a Blackboard workshop during the 2010-2011 academic year. Results of the data collected for this question indicate: of the 268 participant who responded to this question, 83 or 31% of the respondents indicated they did attended a Blackboard workshop, while 185 or 69% indicated they did not attended a Blackboard workshop. Further data analysis revealed that a breakdown based on campus type, of the participants from the main campus 75% indicated they had not attended a Blackboard workshop and 25% indicated they had attended a Blackboard workshop. The results for the participants from regional campuses indicate that 53% of the participants had attended a Blackboard workshop while 47% had not attended a Blackboard workshop.

Of the participants who reported they had not attended a Blackboard workshop, 34% indicated the Blackboard workshops were offered on dates and/or times that conflicted with their teaching schedule; and 11% indicated they were unaware of scheduled Blackboard workshops. The 55% remaining participants who indicated they did not attend a Blackboard workshop provided short answer statements for their reasons for not attending. The results of the short answer statements were: not interested in workshops- 26%; do not use Blackboard- 17%; time conflicts- 15%, prefer to learn on

my own- 15%; attended a workshop in the past- 12%; use another LMS- 11%; and workshops not offered on my campus- 3%.

These findings suggest that many faculty are not taking advantage of training in the use of Blackboard offered by the university. A lack of training can contribute to the underutilization of the Blackboard features/tools available to faculty. These findings are consistent with research regarding limited or absent training and the underutilization of LMSs by faculty (Morgan, 2003; Rogers, 2000; West et al., 2007).

Section 4: Open-response question regarding common barriers to the utilization of Blackboard as experienced by the faculty.

To gain a better understanding of the reasons faculty do not utilize Blackboard for their course related activities and/or assignments at a Midwestern university, a question allowing open-responses was included in the survey. Participants reported, with the highest frequencies, their reasons for not utilizing Blackboard are either because they use another LMS (33%) or because they perceive the Blackboard software as having too many technical difficulties (33%).

Lack of technical skills (14%) and inability to integrate technology into their course content/materials (10%) were also cited. Other reasons for not utilizing Blackboard, reported at lower frequencies, included: intellectual property concerns (4%); concerns about increased time, effort and work in using Blackboard (3%); students do not like to use Blackboard (1%); and concerns about loss of personal interaction with the students (1%).

These responses are reflective of the reasons for underutilization of LMSs published in research concerning the use and adoption of technology in the higher education (Jarrahi, 2010; Lewis et al., 2011; Rogers, 2000; West et al., 2007). In their 2007 study, West et al. concluded ". . . we found that there are two learning challenges for instructors as they begin to use a Blackboard feature: challenges with gaining technical competency with the tool as well as integration competency" (p. 14). Keesee and Shepard (2011) reported ". . . comments frequently included issues with 'multiple technical problems' which made faculty apprehensive about expending the energy to either learn to use or use the CMS" (Recommendations for Action section, para. 2).

Conclusions

The findings of this study indicate that many of the Blackboard features/tools available to faculty are underutilized. The findings in this study indicate that faculty utilization of Blackboard is not independent of campus affiliation at this higher education institution. The findings indicate the faculty's most common utilization of Blackboard at this university is for the posting and distribution of course related documents/materials, recording grades in the grade center, submission of assignments, and facilitating electronic discussion boards. Results of the open-response question indicate lack of training and technical difficulties experienced by the Blackboard product are barriers to the utilization of Blackboard commonly experienced by faculty at this university.

Recommendations

This study sought to gain a better understanding of faculty utilization of Blackboard for course related activities and/or assignments at a Midwestern university.

The findings of this study indicate an underutilization of Blackboard features/tools by faculty. The primary goal when implementing an LMS or any educational technology is to enhance student learning (Clark & Mayer, 2011; Malikowski, 2008; McCabe & Meuter, 2011). Greater utilization of the LMS or educational technology has greater potential for enhancing student learning. Creation of a comprehensive training program providing faculty with the information and skills required to effectively create diverse educational activities can assist faculty in utilizing Blackboard to its full potential to enhance student learning.

Based on the findings of this study and responses provided by the faculty, the following recommendations are suggested for the administration and decision-makers at this Midwestern University:

1. Faculty at this higher education institution cite a lack of technical skills as a factor contributing to underutilization of Blackboard. It is recommended:

   - There be an increase in the variety of topics and/or the Blackboard features/tools which are the focus of the training, and increasing the number of Blackboard workshops university-wide. Providing a greater diversity in training programs has the potential of increasing diverse utilization of Blackboard features/tools. Additionally, training specific course design and pedagogical standards with the use of technology should be offered to all faculty. The creation of an instructional/educational technology center, staffed with a minimum of one full-time staff member qualified in instructional design, at each

campus would provide greater support for faculty, and increase faculty's access to support. Conducting a needs assessment to determine faculty interest of topics will assist in developing beneficial training workshops. Improved communications with all members of the university community may increase workshop attendance. Training concerning Intellectual Property Rights when utilizing technology should be a part of a comprehensive training program. Information regarding the higher education institution's policy on Intellectual Property Rights should also be presented to faculty.

2. Faculty at this higher education institution cite technical difficulties experienced in the Blackboard system as a reason for underutilization. It is recommended:

- There is an improvement in infrastructure providing better access to high speed internet services to the members of the university community across all campuses. Concurrent with the increase in infrastructure, there needs to be better access to technology for adjunct faculty on all campuses allowing them to utilize the Blackboard features/tools for their courses. Faculty need to have resources, computers and space to provide access to technology, specifically Blackboard, to their students for in-class activities and assignments. There should be an increase in server capacity to facilitate traffic and usage across all campuses. Increasing the technical and training

support staff will allow for better customer service and provide more opportunities for members of the university community to receive training and assistance. Improved communications with members of the university community regarding technical issues, upgrades, and/or outages should be a priority.

3. Faculty cite various other reasons and differing degrees of satisfaction with Blackboard as contributing to their underutilization of Blackboard. It is recommended that satisfaction surveys be provide to all members of the university community, who utilize Blackboard, on a continuous on-going basis.

Recommendations for Future Research

Based on the findings of this study, the following recommendations for future research are suggested:

1. It is recommended that a quantitative and/or qualitative study surveying a larger sample size be conducted regarding the utilization of Blackboard by faculty at this higher education institution.

2. This study could be replicated at this higher education institution to determine the utilization of other LMSs and/or educational technologies.

3. It is recommended that a quantitative and/or qualitative study and focus group interview be conducted regarding student and faculty satisfaction with Blackboard at this higher education institution.

4. It is recommended that further research is needed to identify and investigate the factors influencing the difference in Blackboard utilization by faculty based on campus affiliation.

Limitations of the Study

This study sought to describe the utilization of Blackboard by faculty at a large Midwestern university. Several limitations were identified throughout the course of this study. Future research on this subject, taking these limitations into consideration, should be conducted. The limitations of this study were:

1. The research instrument was not piloted for validity and reliability prior to conducting this study.

2. The research instrument, a survey, inquired only about the utilization of certain Blackboard features/tools.

3. The survey was only available to faculty for two weeks during the 2011 summer quarter.

4. The sample from regional campuses was much smaller than that of the sample of participants from the main campus.

5. Geographical location of the regional campuses was not identified.

6. Socioeconomic status of the communities in which the regional campuses are located was not identified.

7. Rank of faculty was not taken into consideration for data analysis.

8. Faculty assumptions regarding student's access to technology at residential vs. commuter campuses were not identified and explored.

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   doi:10.1145/1330311.1330324

Appendix A: IRB Approval

OHIO
UNIVERSITY
Office of the Vice President for
Research

11E176

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A determination has been made that the following research study is exempt from IRB review because it involves:

Category   2 _ research involving the use of educational tests, survey procedures, interview procedures or observation of public behavior

Project Title: A Study of the Utilization of Blackboard by Faculty at Ohio University

Primary Investigator: David L. Nichols

Co-Investigator(s):

Advisor: Teresa J. Franklin
(if applicable)

Department: Educational Studies/Instructional Technology

Rebecca Cale   07/11/11

Rebecca Cale, AAB, CIP   Date
Office of Research Compliance

The approval remains in effect provided the study is conducted exactly as described in your application for review. Any additions or modifications to the project must be approved (as an amendment) prior to implementation.

Appendix B: Informed Consent Statement

Midwestern University Consent Statement

Title of Research: <u>An Exploration of Blackboard Utilization by Faculty at a large Midwestern University.</u>

Primary Investigator: <u>David Nichols</u>

Department: <u>Educational Studies/Instructional Technology at Midwestern University</u>

You are being asked to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to participate in this study. You should receive a copy of this document to take with you.

<u>Explanation of Study</u>

This study seeks to examine the usage of Blackboard by faculty engaged in teaching summer courses at a Ohio University for the purpose of gaining a better understanding of the utilization of Blackboard for course related activities.

If you agree to participate, you will be asked to complete an on-line survey. Your participation in the survey will take approximately 5-8 minutes.

<u>Risks and Discomforts</u>

Your participation in this study does not involve any type of risks or discomfort.

<u>Benefits</u>

The results of this study will help inform educational administrators and decision makers about the usage of Blackboard at Ohio University.

<u>Confidentiality and Records</u>

Any data you provide will be kept confidential, and will only be used for this study. Your responses to the survey question will be anonymous. Your name and email addresses will

not be kept during the data collection phase nor will they be attached to any responses. All data will be destroyed one year after the completion on this study.

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:

      * Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;

      * Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU;

Participation and withdrawal

Your participation in this study is voluntary. Participants can choose whether to participate in this study or not. If you volunteer to participate in this study, you may withdraw at any time without any consequences. You may also refuse to answer any questions you don't want to answer and still remain in the study.

Contact Information

If you have any questions regarding this study or your participation in this study, please do not hesitate to contact the researcher David Nichols via email at dn264496@ohio.edu or his advisor Dr. Teresa Franklin via phone at (740)593-4561 or via email franklit@ohio.edu

If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740)593-0664.

To Take The Survey

By clicking **Continue** you are agreeing to participate in this study, you are agreeing that:

·   you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered

·   you have been informed of potential risks and they have been explained to your satisfaction.

·   you understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study

·   you are 18 years of age or older

·   your participation in this research is completely voluntary

·   you may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

Please print a copy of this document for your records.

- ☐   **Continue-- Check this box to take survey**

Appendix C: Survey

Section 1: Demographic information

Study of the Utilization of Blackboard by Faculty at a Midwestern University
❑ Continue-- Check this box to take survey

If Continue Is Not Selected, Then Skip To End of Survey

Q2 What is your gender?
○ Male
○ Female

Q3 Which Midwestern University campus do you primarily teach courses through:
○ Main
○ A regional campus

Section 2: Frequency of utilization of Blackboard features/tools and is likelihood of increased Blackboard utilization based on the addition of an electronic portfolio.

Q4 For the purpose of this survey, the terms Sometimes and Always are defined as follows: Sometimes- occasionally but not every time. For example you may have your students submit some assignments but not all assignments are submitted through Blackboard. Always- students submit every assignment through Blackboard. Do you post your syllabus, course related materials (readings, rubrics, etc.), and/or links to external resources in Blackboard?

	Never	Sometimes	Always
Syllabus	○	○	○
Course Related Materials	○	○	○
Links to External Resource	○	○	○

Q5 Do you use the Wiki, Blog, and/or Discussion Board tools in Blackboard for course related activities or assignments?

	Never	Sometimes	Always
Wiki	○	○	○
Blog	○	○	○
Discussion Board	○	○	○

Q6 Do you use the evaluation tools in Blackboard for course related activities or assignments?

	Never	Sometimes	Always
Assignment Submission	O	O	O
Quiz	O	O	O
Exam	O	O	O
Survey	O	O	O

Q7 Do you use audio/video tools in Blackboard for course related activities or assignments?

	Never	Sometimes	Always
Podcast	O	O	O
Embed Audio/Video	O	O	O
Post Links to Audio/Video	O	O	O

Q8 Do you use the interactive tools in Blackboard for course related activities or assignments?

	Never	Sometimes	Always
Virtual Classroom	O	O	O
Chat	O	O	O

Q9 Do you use the grade center in Blackboard?
O Never
O Sometimes
O Always

Q12 How likely would you be to increase your utilization of Blackboard for course related activities or assignments in future courses if an electronic portfolio tool was available in Blackboard?
O Very Unlikely
O Unlikely
O Undecided
O Likely
O Very Likely

Section 3: Blackboard workshop attendance.

Q10 Did you attend a Blackboard workshop during the 2010-2011 academic year?
❍ Yes
❍ No

Q11 If you did not attend a Blackboard workshop during the 2010-2011 academic year; please select one of the following reasons that best describes why.
❍ Was unaware of scheduled Blackboard workshops
❍ Blackboard workshops were offered on dates and/or times that conflicted with my teaching schedule
❍ Other Please Specify _____

Section 4: Open-response question regarding common barriers to the utilization of Blackboard as experienced by the faculty.

Q13 If you do not utilize Blackboard for course related activities or assignments, please briefly describe why.

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