Social Networking and E-Learning: Determining Time and Satisfaction Derived Through Dual Use

Kevin Williams

Dakota State University

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Social Networking and E-Learning:
Determining Time and Satisfaction Derived through Dual Use

By
Kevin Williams

Dissertation Committee:
Dr. Wayne Pauli (Chair)
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Submitted in Fulfillment of the
Requirement for the Degree of Doctor of Science
Dakota State University
DISSECTATION APPROVAL FORM

This dissertation is approved as a credible and independent investigation by a candidate for the Doctor of Science in Information Systems degree and is acceptable for meeting the dissertation requirements for this degree. Acceptance of this dissertation does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department or university.

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Dissertation Title: Social Networking and E-Learning: Determining Time and Satisfaction Derived through Dual Use

Dissertation Chair: Wayne E. Pauli Date: March 15, 2013

Committee member: Kevin Farmer-Bay Date: March 15, 2013

Committee member: Daniel A. Talley Date: March 15, 2013
Dedication

A research project such as this, involves not only the researcher but many other people. In that, I would like to dedicate this dissertation to my God, my beautiful and loving wife, Brittany, and my children. Your understanding and encouragement throughout this process was critical to my success. Also, my dissertation committee, Dr. Wayne Pauli (chair), Dr. Daniel Talley, and Dr. Kari Forbes-Boyt, was incredibly supportive and kept the project on task. Thank you, Anson Godfrey, my dissertation editor, for keeping me on task and teaching me how to eat an elephant. Lastly, I would like to thank all my friends and family for the encouraging words when I felt that I couldn’t go on.
Abstract

The purpose of this study was to investigate student use of online, social networks (Facebook, LinkedIn, etc.), E-Learning course content management systems (Blackboard and Desire 2 Learn), and to determine the extent of student participation in each system and the relationship, if any, between these systems. Objectively, this study was designed to: 1) determine if greater E-Learning satisfaction is derived through increased use of online social networking sites; 2) determine, through self-reporting, how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&M University-Texarkana use social networking during face-to-face class time; and 3) collect data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa.
Declaration

I hereby certify that this project constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

I declare that the project describes original work that has not previously been presented for the award of any other degree of any institution.

Signed,

Kevin Williams
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Chapter 1: Introduction to the Study

Distance education has seen incredible growth patterns in recent years and, with patterns of increase predicted in the future, this trend is likely not to change. In 2009, The Sloan Consortium reported that over 4.6 million students took at least one online course in the fall semester of 2008; representing a 287% increase over those taking online courses in the fall semester of 2002 (Allen & Seaman, 2005; Allen & Seaman, 2009). Figure 1 below provides full details.

Figure 1: (Allen & Seaman, 2009)

E-Learning systems, the primary delivery method of course content in distance education courses, have also seen distinct and continuing growth patterns in recent years. E-Learning systems (e.g. Blackboard, WebCT, Angel, and Desire 2 Learn) are course content management systems that facilitate the delivery of online course material and instruction. These systems can be utilized to provide a repository for documentation for face to face courses, augmentation of hybrid courses, or interactive sites that instructors and students can utilize to communicate and collaborate. Courses offered through E-Learning systems allow students the flexibility of asynchronous as well as synchronous interactivity in courses without sacrificing rigor. As demand for online courses increase, companies like Blackboard will continue to experience
Social ELearning

substantial growth. Blackboard reported a 2010 third-quarter sales increase of more than $75 million over the third quarter in 2009 (Blackboard, 2010).

Online social networking companies have also experienced significant growth over the last few years. Connecting with friends through social networking, as well as taking courses through online learning management systems, has become the norm instead of the exception. Ellison, et al. (2007) explains that different social networking sites have differing population foci. Facebook, with a primary focus on college student populations, is one of the most successful of social networking platforms (Ellison, et al., 2007). Since it was founded in 2004, Facebook has more than 800 million active users, each averaging 130 friends, with approximately half of these users logging into the social network daily ("Face Book Statistics," 2011). Another example of an online social network that has experienced success is LinkedIn.com. LinkedIn is orientated to a career related framework (Ellison, et al., 2007), and is the largest professional social network, boasting 161 million members in over 200 countries as of March 2012 (“LinkedIn Statistics”, 2012). Social networking has a plethora of uses for organizations and e-learning (Grippa, Francesca, et al., 2010; Womble, 2008).

Enkin and Jadad (1989) state that ‘anecdotal information should not be considered as a replacement for, but as a complement to formal research evidence’. The following anecdotal evidence will assist in understanding the rationale which prompted this study:

Students who attend prestigious universities derive success not simply for the outstanding educational opportunities but also through the social connections made with other classmates. These social connections can lead to marriage, joint business ventures, future political affiliations as well as a host of other forms of relationships.

Many factors affect attrition, persistence, satisfaction and overall success in a student’s online education. Hart (2012) discusses social connectedness and presence as two of these contributing factors. E-Learning systems encompass Web 2.0 tools like wikis, discussion boards, and blogs that facilitate interactions but often lack true social connectedness and presence. In order to bridge the gap between social connectedness and online learning, educators and E-
Learning system developers must develop an understanding of the desires of students as well as the benefits and satisfaction derived from these social connections.

Background of the Study

Drucker (2000) defines E-Learning as, “just-in-time education integrated with high velocity value chains. It is the delivery of individualized, comprehensive, dynamic learning content in real time, aiding the development of communities of knowledge, linking learners and practitioners with experts”. With that said, an E-Learning system could be described as a digital management system that allows for instructors and students to meet virtually for the delivery of knowledge (Ismail, 2002). Knowledge, as described by Alavi and Leidner (2001), can be “(1) a state of mind, (2) an object, (3) a process, (4) a condition of having access to information, or (5) a capability.” In order to truly understand what knowledge means, Alavi and Leidner (2001) suggest a definition adopted through multiple knowledge definitions, as proposed by Huber (1991) & Nonaka (1994), to be “a justified belief that increases an entity's capacity for effective action”. For knowledge acquisition to be considered successful, an increase in a learner’s capacity, whether demonstrated through assessment or ability, must be present.

Institutions of higher learning utilize E-Learning systems for a variety of reasons: reduced cost for delivery, increased retention, delivery of knowledge in a consistent manner, capture and communication of expert knowledge, and a proof of overall completion of key content areas (Kruse, 2002). Kruse (2002) goes on to explain that learners have many individual advantages in using E-Learning: availability, self-pacing, and interactivity. These benefits are emphasized through an E-Learning systems ability to accommodate universal design theory through integrations into Web 2.0 technologies. Many universities have labeled online education as critical to their long-term strategies (Allen & Seaman, 2011) and are directing courses into a more student centered, online E-Learning environment.

Kruse (2002) discusses availability, self-pacing, and interactivity as advantages to delivering online course material through E-Learning systems. To further accentuate the need for interactivity or connectedness, Bandura (1977) states that, "Learning would be exceedingly
laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action.”

Many factors affect attrition, persistence, satisfaction and overall success in a student’s online education. Hart (2012) discusses social connectedness and presence as a contributing factor in the overall success of a student’s online education. In order for social connectedness to be successful in an online, E-Learning environment, a social community must exist at some level.

The Parallel Growth of Social Media

Social communities can exist in a variety of mediums. Cook and Smith (2004) discuss that community members can learn from one another in a variety of outlets: “a single mother coming to storytelling classes, a community member making use of free internet access to email relatives, or a bar customer taking part in an internet pub quiz”. The common thread among these and many other examples exist in the reality that community members learn from one another. This informal social learning lends credence to the more formalized learning exhibited in E-Learning platforms.

Kim, Jeong, and Lee (2009) suggest that nine major features must be in place for social sites to be successful: “1) personal profiles, 2) establishing online connections, 3) participating in online groups, 4) communicating with online connections, 5) sharing UCCs (user created content), 6) expressing opinions, 7) finding information, 8) open API for third-party applications, and 9) connecting with other sites”, but many of these features are absent in online, E-Learning systems. The presence of these features creates an opportunistic marriage of online, E-Learning systems with that of social networking (social media) sites.
Statement of the Problem

The purpose of this study is to investigate and review student use of online, social networks (Facebook, LinkedIn, MySpace, etc.) and E-Learning course content management systems (Blackboard and Desire 2 Learn), to determine the extent of student participation in each system and the relationship, if any, between these systems. Objectively, this study will 1) determine if greater E-Learning satisfaction is derived through increased use of online social networking sites; 2) determine, through self-reporting, how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&M University-Texarkana use social networking during face-to-face class time; and 3) collect data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa. This study will:

1. Determine whether student participation in online social network interactions increases satisfaction in E-Learning environments.
2. Determine whether the existence of university supplied tablet PCs in the classroom will increase the likelihood that students will participate in social online networking during class time.
3. Determine whether the existence of university supplied tablet PCs in the classroom will increase the likelihood that students will spend more time in their online course environments.
4. Determine whether social networking portals available through E-Learning systems increase user satisfaction.
5. Determine whether E-Learning system portals available through social networks increase user satisfaction.

Research Questions

As discussed in previous sections, understanding student use of tablet PCs during class, satisfaction of student use of E-Learning systems and social networks and student desire for portals between E-Learning systems and social networks can assist in determining a student’s derived satisfaction in taking online courses through online, E-Learning systems. This study
queries students, from freshman to doctoral level, at Dakota State University and Texas A&M University-Texarkana utilizing a series of survey questions that address the following research questions outlined in Table 1.

<table>
<thead>
<tr>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the frequency of student participation in social networking during class time?</td>
</tr>
<tr>
<td>2. How often do students access social networking sites?</td>
</tr>
<tr>
<td>3. How often do students access E-Learning environment?</td>
</tr>
<tr>
<td>4. What are the current satisfaction levels of students in their E-Learning environment?</td>
</tr>
<tr>
<td>5. What are the current E-Learning environment satisfaction levels of students who use social networking?</td>
</tr>
<tr>
<td>6. What are the current E-Learning environment satisfaction levels of students who do not use social networking?</td>
</tr>
<tr>
<td>7. What is student’s acceptance of social E-Learning environments (portals between social networking and E-Learning Systems)?</td>
</tr>
</tbody>
</table>

Table 1

In order to further align the research questions with the purpose of this study, an explanation of the research questions involved in this study are as follows:

**Question 1: What is the frequency of student participation in social networking during class time?**

Based on user response to the survey, the frequency of student participation in social networking during class time will be revealed. Determining if students access social networking sites during class time could help instructors and course designers understands the desire of students in learning.
**Question 2: How often do students access social networking sites?**

This research question queries students concerning the amount of time students spend accessing social networking sites during an average week. Determining the frequency of students accessing social networking sites will be necessary in determining if greater E-Learning satisfaction is derived through increased use of online social networking sites.

**Question 3: How often do students access E-Learning environment?**

This research question is designed to discover the amount of time students spend accessing their online, E-Learning system during an average week. Determining the frequency of students accessing their online E-Learning system will be necessary in determining if greater E-Learning satisfaction is derived through increased use of online social networking sites.

**Question 4: What are the current satisfaction levels of students in their E-Learning environment?**

Based on user response to the survey, the current satisfaction levels of students using their E-Learning systems will be determined. Determining satisfaction levels of students in their E-Learning systems could drive future E-Learning system development and uses of system.

**Question 5: What are the current E-Learning environment satisfaction levels of students who use social networking?**

Based on user response to the survey, the current satisfaction levels of students who use social networking concurrent with their E-Learning systems will be determined. Determining satisfaction levels of students who use social networking along with E-Learning systems could drive future E-Learning system development and uses of these systems.
**Question 6:** What are the current E-Learning environment satisfaction levels of students who do not use social networking?

Based on user response to the survey, the current satisfaction levels of students who do not use social networking concurrent with their E-Learning systems will be determined. Determining satisfaction levels of students who do not use social networking along with E-Learning systems could drive future E-Learning system development and uses of these systems.

**Question 7:** What is student’s acceptance of social E-Learning environments (portals between social networking and E-Learning Systems)?

This research question is designed to discover student’s acceptance of portals between social networking sites and E-Learning environments. Determining the student’s acceptance of portals between social networking sites and E-Learning environments could drive future E-Learning system development and uses of these systems.

This study will focus on 1) determining if greater E-Learning satisfaction is derived through increased use of online social networking sites; 2) determining, through self-reporting, how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&M University-Texarkana use social networking during face-to-face class time; and 3) collect data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa.

In order to ensure that the research questions closely follow the scope of the study, Table 2 illustrates mapping between the scope statements and research questions.
<table>
<thead>
<tr>
<th>Scope Statement</th>
<th>Research Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) determining if greater E-Learning satisfaction is derived through increased use of online social networking sites;</td>
<td>Question 2: How often do students access social networking sites?</td>
</tr>
<tr>
<td></td>
<td>Question 3: How often do students access E-Learning environment?</td>
</tr>
<tr>
<td></td>
<td>Question 4: What are the current satisfaction levels of students in their E-Learning environment?</td>
</tr>
<tr>
<td></td>
<td>Question 5: What are the current E-Learning environment satisfaction levels of students who use social networking?</td>
</tr>
<tr>
<td></td>
<td>Question 6: What are the current E-Learning environment satisfaction levels of students who do not use social networking?</td>
</tr>
<tr>
<td>2) determining, through self-reporting, how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&amp;M University-Texarkana use social networking during face-to-face class time;</td>
<td>Question 1: What is the frequency of student participation in social networking during class time?</td>
</tr>
<tr>
<td></td>
<td>Question 2: How often do students access social networking sites?</td>
</tr>
<tr>
<td>3) collect data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa</td>
<td>Question 7: What is student’s acceptance of social E-Learning environments (portals between social networking and E-Learning Systems)?</td>
</tr>
</tbody>
</table>

Table 2

Hypotheses
Trochim and Donnelly (2008) define a hypothesis as a ‘specific statement of prediction’ and describe in concrete terms what the researcher expects to occur in a study. A hypothesis differs from a research question which can be defined as the significant issues that are addressed in a study (Trochim & Donnelly, 2008). Table 1 shows mapping to delineate the relationship of each research question with its corresponding hypothesis (es), as well as outline which survey question addresses which research question.

The first hypothesis determines whether or not students who spend more time in their course content management system have higher GPAs. The second hypothesis will reveal if students who spend more time on social networking sites have lower GPAs. The third hypothesis will discover whether or not students who use social networking sites spend less time in their course content management system than students who do not use social networking sites. The final hypothesis will determine whether or not students who use social networking sites derive greater satisfaction from their course content management system than students who do not use social networking sites.

Hypothesis #1: Students who spend more time in their course content management system have higher GPAs.

It is expected that students who spend more time in their course content management system have higher GPAs.

The following research question will address the first hypothesis:

3) How often do students access E-Learning environment.

Hypothesis #2: Students who spend more time on social networking sites have lower GPAs.

Much like in hypothesis #1, it is expected that students who spend more time on social networking sites have lower GPAs.

The following research questions will address the second hypothesis:

2) How often students access social networking sites.
**Hypothesis #3:** Students who use social networking sites spend less time in their course content management system than students who do not use social networking sites.

It is highly anticipated that students who do not use social networking sites will spend more time utilizing course content management systems than those that use social networking sites.

The following research questions will address the third hypothesis:

2) How often students access social networking sites.
3) How often students access E-Learning environment.

**Hypothesis #4:** Students who use social networking sites derive greater satisfaction from their course content management system than students who do not use social networking sites.

It is anticipated that students who use social networking sites will find greater enjoyment than students that do not use social networking sites when using a content management system.

The following research questions will address the fourth hypothesis:

3) How often students access E-Learning environment.
4) Satisfaction levels of students in their E-Learning environment.
5) E-Learning environment satisfaction levels of students who use social networking.

Based on the results of the survey, descriptive statistics will determine:

- Frequency of student participation in social networking.
- How often students access social networking sites.
- How often students access E-Learning environment.
- Satisfaction levels of students in their E-Learning environment.
- E-Learning environment satisfaction levels of students who use social networking.
- E-Learning environment satisfaction levels of students who do not use social networking.
- Student acceptance of social E-Learning environments (Appendix A).

Table 3 describes mapping between research questions and the corresponding hypothesis (es) as well as relate the survey question number/question set to its corresponding research
questions and hypothesis. Note the absence of questions 1-5 from the following table; they were demographic in nature. Table 3 is as follows:

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypotheses</th>
<th>Survey Question Number/ Question Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Frequency of student participation in social networking during class time.</td>
<td>H2</td>
<td>9</td>
</tr>
<tr>
<td>2) How often students access social networking sites.</td>
<td>H2</td>
<td>6</td>
</tr>
<tr>
<td>3) How often students access E-Learning environment.</td>
<td>H1, H3, H4</td>
<td>7</td>
</tr>
<tr>
<td>4) Satisfaction levels of students in their E-Learning environment.</td>
<td>H4</td>
<td>10</td>
</tr>
<tr>
<td>5) E-Learning environment satisfaction levels of students who use social networking.</td>
<td>H1, H4</td>
<td>9, 10</td>
</tr>
<tr>
<td>6) E-Learning environment satisfaction levels of students who do not use social networking.</td>
<td>H1</td>
<td>9, 10</td>
</tr>
<tr>
<td>7) Student acceptance of social E-Learning environments</td>
<td>H4</td>
<td>11, 12, 13, 14</td>
</tr>
</tbody>
</table>

Table 3

Importance of the Study

In recent years, there has been a distinct and continual trend for growth of both social networking and E-Learning systems as stated by Allen & Seaman (2011) who report that this trend in online, E-Learning is expected to continue as it has become critical to the long-term strategy of many universities (Figure 2). Two social networking companies, Facebook and LinkedIn, have realized tremendous growth between 2007 and 2011. Facebook has gone from 58 million active users in 2007 to 800 million active users in 2011 (Facebook Statistics, 2011), and LinkedIn from 17 million to 135 million users (LinkedIn Statistics, 2012). Figure 3 provides a graphical representation of this growth.
Figure 2 graphically displays the percentage of universities that acknowledge that online education is critical to the long-term strategy by of the institution and Figure 3 displays the growth of two leading social networking sites, Facebook and LinkedIn. Viewing these figures
solidifies that connecting with friends through social networking, as well as taking courses through online learning management systems, has become the norm instead of the exception.

Inserting the Tablet PC Variable

This study analyzes issues central to the areas of information systems and instructional/educational technology and will add to the body of knowledge in both disciplines. It reviews student use of tablet PCs during class time, investigates user perception of social networking and E-Learning portals, and determines if greater satisfaction in the utilization of E-Learning systems is derived through increased use of online social networking site. Analysis of these primary research issues will result in greater knowledge regarding student desires and satisfaction. Survey results of the students from Dakota State University and Texas A&M University – Texarkana will be analyzed and reported. The implications of the survey results will yield benefits in numerous outlets as follows:

The first primary issue addresses determination of student’s current use of tablet PCs during class time. Thoughtful consideration of the results of this study regarding the utilization of tablet PCs during class time can direct the way in which instructors use technology in the classroom.

An additional primary issue involves determining user perception of social networking and E-Learning portals. Recognizing user perception of such portals can guide development of future E-Learning systems and social networking systems, based on desires of the users.

The final significant issue will investigate whether greater E-Learning satisfaction is derived through increased use of online social networking sites. Identification of such satisfaction can influence the way in which E-Learning system developers advance these systems as well as define best practices in such systems.
Factors Affecting Attrition and Persistence

Pleskac, et al. (2011) states that the ‘most descriptive level explanations of student retention are structural in nature. They focus on how academic, social–psychological, and environmental factors, predict intermediate attitudes such as different levels of satisfaction and perceptions of poor fit with the university setting, which in turn predict college turnover.’

Attrition rates and factors affecting attrition in students taking university courses are pressing issues facing institutions of higher learning (Tresman, 2002; Cookson, 1990; Simpson, 2004). Allen & Seaman (2009) report that more than 4.6 million students took an online course in the fall semester of 2008, while Carr (2000) states that most universities report a 10 – 20% higher completion rates in traditional courses than in distant learning; some of which report less than half of students persist in taking online courses. According to Hart (2012), the following have been determined as barriers to persistence:

Auditory Learning Styles

Harrell and Bower (2011) suggest that the environment of the online, E-Learning systems and learning styles can cause great frustration which can ultimately lead to attrition. This disdain for online courses, due to disconnect between the learning style and online, E-Learning systems, experienced by students can also deter them from taking future online courses or dropping out altogether (Hart, 2012).

Computing Skills

Although Dupin-Bryant (2004) discusses that better computer skills are not related to student attrition or persistence, basic computer skills can be a barrier to persistence (Hart, 2012). Basic computer skills are necessary when attempting online course work through an E-Learning system or other general, traditional courses in higher education. Levy (2003) explains that, “Most instructors will not be able to tell students why a file is not downloading, or how to access online tutoring or library resources, or how to extend the time limit to take a test, making student access to orientation and support even more critical”. This understanding has great implications in the preparedness of students in regards to computer proficiency.
College Status and Graduating Term

Hart (2012) discusses college status and graduating term as another barrier to persistence. Students that have lower college status (freshman or sophomore) are more likely to withdraw from a program than those that are closer to graduation (Levy, 2009).

Isolation and Decreased Engagement

Isolation and decreased engagement in taking courses, especially online courses delivered through and E-Learning system, can be a significant cause of attrition (Hart, 2012). Bunn (2004) explains that two types of student isolation can exist in a course: isolation from instructor and isolation from peers. Angelino, Williams & Natvig (2007) discuss that “distance learners have many challenges to overcome such as physical separation, feeling of isolation, lack of support, and feeling disconnected; learning communities can help”.

Non-academic Issues

Non-academic issues can often be barriers to persistence. These issues can include balancing work and family demands (Hart, 2012) and often involves ‘decreased leisure activities and/or socialization with friends’ (Bunn, 2004).

Poor Communication

Poor communication or lack of communication from faculty to student can be a significant barrier to persistence (Hart, 2012). Faculty members who are slow to provide feedback or are difficult to contact often play a critical role in a student’s decision to withdraw from a course or a program (Bunn, 2004).

Although attrition rates are higher in online courses than in face-to-face courses (Carr, 2000), these factors are not always limited to the online, E-Learning environment. Therefore, in order to determine and review factors that affect a student’s success, regardless of modality in taking courses, data that addresses student use of social networking and E-Learning access, in and out of the classroom is important. Satisfaction in taking an online course delivered through an E-Learning system is amongst the many factors that influence a student’s success (Hart, 2012; Angelino, Williams & Natvig, 2007).
Correlation Between Social Networking and E-Learning

In order to comprehend whether a correlation exists between increased use of online social networking sites and E-Learning satisfaction, a baseline for overall satisfaction of students in E-Learning and social networking must be established. Collecting data regarding student’s opinion of portals between E-Learning systems and social networks and portals between social networks and E-Learning systems can also yield student desires and satisfaction levels. Satisfaction influences attrition and can be a determinant in a student’s desire to enroll in future online courses delivered through E-Learning systems. In a recent study, Leong (2011) surveyed 294 students enrolled in 19 online or hybrid courses at University of Hawaii System and Hawaii Pacific University during spring and fall semesters in 2005 and finds that social presence has a non-significant effect on overall satisfaction. However, the results of this study imply that social presence strongly affects cognitive absorption which in turn positively affects satisfaction (Leong, 2011).

Methodology

The study includes 1) determining if greater E-Learning satisfaction is derived through increased use of online social networking sites; 2) determining, through self-reporting, how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&M University-Texarkana use social networking during face-to-face class time; and 3) collect data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa.

Based on the results of the survey, descriptive statistics will determine:

- Frequency of student participation in social networking.
- How often students access social networking sites.
- How often students access E-Learning environment.
- Satisfaction levels of students in their E-Learning environment.
- E-Learning environment satisfaction levels of students who use social networking.
- E-Learning environment satisfaction levels of students who do not use social networking.
- Student acceptance of social E-Learning environments (Appendix A).
Students at Dakota State University and Texas A&M University – Texarkana were asked a series of questions to determine their E-Learning/Social networking usages, satisfactions of usages and interest/interpretation of a series of images along with demographic questions. The demographic section of the survey was used to determine if a good sample of the universities population was represented. Dakota State University had a total class population of 3,101 (1,852 degree seeking) students, and Texas A&M University Texarkana reported an unduplicated total headcount of 1,803 students. All data presented in this section was derived from the South Dakota Board of Regents Fact Book (Fiscal Year 2011) and the Texas A&M University Texarkana Accountability Report (January 2011), unless otherwise noted. Chapter 3 of this dissertation explains in depth the statistical methodologies employed.

Assumptions and Limitations

The following assumptions were made in the design of this research study:

a) Due to anonymity and confidentiality, all surveys were completed as truthfully as possible by all participants.

b) All persons completing this survey were either students at Texas A&M University-Texarkana or Dakota State University.

c) Social networking will continue in its current growth trend and students will continue to use this tool.

d) Due to Facebook’s approximate 845 million active users, it is anticipated that this will be the primary social network used by students in this survey.

e) E-Learning systems will continue to be utilized as primary delivery method for online learning.

f) E-Learning systems will continue its current growth trend and universities will continue to use this tool.

The following limitations of this research are listed below:

a) This research study was limited to student populations from two universities: Texas A&M University-Texarkana and Dakota State University.
b) This research study was limited to two E-Learning systems: Blackboard and Desire 2 Learn.

c) Due to the popularity of Facebook as a social networking site, 93.7% of participants indicate Facebook as their primary choice in social networking sites.

Definitions of Terms

Attrition – the reduction or decrease in the overall number of students completing courses.

E-Learning System – a web based, information system that manages, stores, and delivers content to learners at a distance

Hybrid course – a course having approximately half of course content delivered online and half in traditional classroom environment

Online course – a course having at least 80% of course content delivered online

Persistence – the continuation of a student’s enrollment and success in a course for college credit, continuing education for non-credit, or university degree program despite the modality of course delivery.

The Remainder of the Study

Chapter 1 has outlined an overview for the background of the study, the statement of the problem, the purpose of the study, the research questions that shaped the survey, the hypotheses that were tested, importance and scope of the study, definitions, and limitations. Chapter 2 will guide the reader through the current literature pertaining to this research. Chapter 3 outlines the research methodology used in this study. Chapter 4 discusses the data collection methods, analysis and findings. Chapter 5 outlines the conclusions, discussions and future research related to this study.
Chapter 2: Literature Review

Introduction

The Sloan Consortium reported that over 4.6 million students took at least one online course in the fall semester of 2008; representing a 287% increase over those taking online courses in the fall semester of 2002 (Allen & Seaman, 2005; Allen & Seaman, 2009). With the trend in online courses expected to continue, many colleges and universities have identified distance learning as critical to their long-term strategy (Allen & Seaman, 2011).

Research exists regarding the usage of E-Learning systems as well as studies of social networking usage. Literature describing satisfaction levels of users utilizing E-Learning and online, social networking websites is available. However, upon review of the literature, discussions of how time and satisfaction levels are affected through dual usage of online social networking and E-Learning were not present. This research was designed to investigate student use of online, social networks (Facebook, LinkedIn, etc.) and E-Learning course content management systems (Blackboard and Desire 2 Learn) and to determine the extent of student participation in each system, satisfaction levels through usage of systems, and the relationship, if any, between these systems.

Acknowledging that many factors affect satisfaction and the overall success in a student’s online education (Hart, 2012; Angelino, Williams & Natvig, 2007), this chapter provides a guide to the current literature pertaining to this study; the literature review begins with defining learning.

Learning

Dewey (1944, pps. 334-335) explains that two definitions for learning exist. Learning can be defined as ‘the sum total of what is known, as that is handed down by books and learned men. It is something external, an accumulation of cognitions as one might store material commodities in a warehouse. Truth exists ready-made somewhere. Study is then the process by
which an individual draws on what is in storage. On the other hand, learning means something which the individual does when he studies”. Knowledge, as described by Alavi and Leidner (2001), can be “(1) a state of mind, (2) an object, (3) a process, (4) a condition of having access to information, or (5) a capability.” In order to truly understand what knowledge means, Alavi and Leidner (2001) suggest a definition adopted through multiple knowledge definitions, as proposed by Huber (1991) & Nonaka (1994), to be “a justified belief that increases an entity’s capacity for effective action”. For knowledge acquisition to be considered successful, an increase in a learner’s capacity, whether demonstrated through assessment or ability, must be present (Seidman & McCauley, 2005). These broad definitions, along with taking into account different learning styles (Simonson, Smaldino, Albright & Zvacek, 2012, pp. 73), could be altered to define learning as knowledge acquisition through the delivery and understanding of content, the development of a process, or another form of discovery in which knowledge transference occurs.

Pashler, McDaniel, Rohrer, and Bjork (2008) define learning styles as, ‘the concept that individuals differ in regard to what mode of instruction or study is most effective for them’. Pashler et. al (2008) discuss that this phenomenon is often understood by learners and ‘that children and adults will, if asked, express preferences about how they prefer information to be presented to them’. Gilakjani and Ahmadi (2011) state that it is important to understand one’s learning style, explaining that when individuals know and understand their learning styles, learning can come more easily and quickly, and that students can become more effective problem solvers. Dunn & Dunn (1979) insist that structure is a key element of learning styles; directions must be provided and continual support and feedback are necessary. The three most common and generally accepted learning styles are auditory, visual, and kinesthetic (Gilakjani and Ahmadi, 2011; Felder and Silverman, 1988). Felder and Silverman (1988) explain that ‘visual and auditory learning both have to do with the component of the learning process in which information is perceived, while kinesthetic learning involves both information perception (touching, tasting, smelling) and information processing (moving, relating, doing something active while learning)’. Pashler, et al (2008) discusses the impact of recognizing learning styles in stating that, ‘this acceptance is perhaps not surprising because the learning-styles idea is actively promoted by vendors offering many different tests, assessment devices, and online technologies to help educators identify their students’ learning styles and adapt their
instructional approaches accordingly’, making the delivery of instruction that addresses each learning style achievable.

Auditory learners often have greater success in learning when the presentation of information is presented to them verbally (Gilakjani and Ahmadi, 2011). Dunn and Dunn (1979) report that 20-30% of school age children are auditory learners based upon their observations. Auditory learners rely heavily on what they hear for knowledge acquisition (Felder and Silverman, 1988).

Visual learners are most successful in learning when information is presented visually (Pashler et al., 2008). Constructed from their observations, Dunn and Dunn (1979) report approximately 40% of school age children as being visual learners. Visual learners learn better through the use of visual representation of information; this representation often comes in the form of ‘pictures, diagrams, flow charts, time lines, films, demonstrations’ (Felder and Silverman, 1988).

Kinesthetic learners often have the greatest success in learning when they can take a ‘hands-on approach’ to learning (Gilakjani and Ahmadi, 2011). Dunn and Dunn (1979) report the remaining 30-40% of school age children as kinesthetic (or hybrid) learners based off of their observations. Kinesthetic learners are active learners that have a greater chance of learning through the use of manipulatives and direct experiences, converting instruction into knowledge through doing instead of listening or seeing (Lamboy, 2003). This style of learner gains knowledge through touch, taste and smell (Felder and Silverman, 1988).

Table 4 provides a brief explanation of each of the three most common and generally accepted learning styles.
<table>
<thead>
<tr>
<th>Learning Style</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory Learner</td>
<td>Auditory learners discover information through auditory listening to the presentation of information (Gilakjani and Ahmadi, 2011).</td>
</tr>
<tr>
<td>Visual Learner</td>
<td>Visual learners are most successful when information is presented visually (Pashler et. al, 2008).</td>
</tr>
<tr>
<td>Kinesthetic Learner</td>
<td>Kinesthetic learners learn best with the ‘hands-on approach’ to learning (Gilakjani and Ahmadi, 2011).</td>
</tr>
</tbody>
</table>

Table 4

The learning styles outlined in Table 4 are the most common styles (Gilakjani and Ahmadi, 2011; Felder and Silverman, 1988), and while they help explain how people learn, a theory that attempts to explain why people behave in certain ways is referred to as the Social Learning Theory (Bandura, 1971).

**Social Learning Theory**

Bandura (1971) discusses that many theories have been offered over the years attempting to explain why people act the way they do and that the most common theory is one in which a person’s behaviors are driven by internal forces. He then states that this explanation excludes the fact that behaviors occur due to those learned in social environments and, in fact, the majority of learning comes from social observations and interactions. Bandura proposes that, in social learning, new behavioral patterns can develop through what is referred to as direct experiences or behavior modeling. Direct experiences are those in which the learner developed new knowledge from a direct result of an event that occurred in the learner’s life and behavioral modeling happens when behaviors are mimicked (Bandura, 1971).

Bandura’s social learning theory emphasizes the importance of behaviors, attitudes, and emotional reactions exhibited in others and create an understanding that people learn from others through observation, imitation, and modeling. Social learning theory is the link between behaviorist and cogitative learning theories through the focus on attention, memory and
motivation (Bandura, 1977). Vygotsky (1962) also suggests that social interaction affects cognitive developments. Vygotsky (1978) explains that interpersonal processes are converted into intrapersonal ones: functions in development occur on the social (interpsychological) level and then the individual (intrapsychological) level. This opportunity for social learning is further accentuated by Bandura (1977): "Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action."

Bandura (1971, p 2) states that ‘man is neither driven by inner forces nor buffeted helplessly by environmental influences’. However, Weisner and Silver (1981) suggest that there is a ‘reciprocal relationship between behavior and the conditions that control it’. The authors explain further that ‘behavior can be altered by rearranging selected elements in the social environment’. Paradigms for practice, when referring to social learning, exist that provide guidelines for creators of communities (Weisner and Silver, 1981). The authors discuss that understanding these is critical for these communities.

Behavior, in a social environment, can be altered through negative and positive reinforcements (O’Reilly & Puffer, 1989). The authors discuss positive vs. negative reinforcement in the workplace, citing that most research is in favor of positive reinforcement, but argue that ‘the failure to use a negative sanction may, in fact, reinforce unproductive norms as individuals learn, for instance, that it is permissible to arrive late, work at half speed and that slipshod quality is tolerated’. O’Reilly & Puffer (1989) also discuss that work units are more productive when managers enforce negative sanctions on employees as warranted.

The impact of social learning theory can be realized in a variety of avenues. Considering the activities that social learning has been shown to effect, crime and violence (Alexander & Langford, 1992; Mihalic & Elliott, 1997; Winfree & Backstrom, 1994), sexuality (Hogben & Byrne, 1998; Kirby, Barth, Leland, & Fetro, 1991), substance abuse (Niaura, 2000; Akers & Lee, 1999; Akers & Lee 1996), and student performance (Zielinska & Chambers, 1995; Lave 1996) are among those researched in the late 20th century.
Social communities can exist in a variety of mediums. Cook and Smith (2004) discuss that community members can learn from one another in a variety of outlets: “a single mother coming to storytelling classes, a community member making use of free internet access to email relatives, or a bar customer taking part in an internet pub quiz”. The common thread among these and many other examples exist in the reality that community members learn from one another and must take an active role in learning (Simonson, et. al, 2012).

According to Brown and Adler (2008), the most important aspect of the internet has yet to be utilized and that social learning ‘is based on the premise that our understanding of content is socially constructed through conversations about that content and through grounded interactions, especially with others, around problems or actions’. The research then reveals that that the focus is on ‘how we learn’ and not centered on ‘what we learn’ (Brown and Adler, 2008). Light (2001) discusses these interactions or engagements as major determinants in a student’s success while pursuing higher education and revealing that students who attended group meetings were more engaged during class time and learned more than those students who did not collaborate with others. The success of social learning can be attributed to the success of learning communities as indicated by Brook and Oliver (2003).

Learning Communities

Allen and Seamen (2011) state that 31% of surveyed college and university students report that they are taking at least one online course and many are taking more than one. While Bonk and Wisher (2000) indicate there is a void in the literature regarding how learning communities are formed, Brook and Oliver (2003) indicate that some researchers feel the creation of learning communities should be of principal concern for online instructors. They also report that there are benefits of collaborative learning (learning communities), ‘including increased motivation (Slavin, 1990), promoting learning achievement (Johnson, 1991; Maxwell, 1998) and perception of skill development, including satisfaction (Benbunan-Fich, 1997)’.

As Bandura (1971) suggests, learning would be exceedingly laborious if ‘if people had to rely solely on the effects of their own actions to inform them what to do’. Brown (1994, p. 10) states that “learning and teaching depend on creating, sustaining, and expanding a community of
research practice. Members of the community are critically dependent on each other. No one is an island; no one knows it all; collaborative learning is not just nice, it is necessary for survival”. Fulton, Yoon and Lee (2005) suggest that ‘an essential element of this community is the expectation that all members share responsibility for each other’s success and for the success of all students in the school.’ DuFour (2007) discusses that learning communities are not only beneficial for students but teachers alike stating that, ‘researchers who have studied schools where educators actually engage in PLC practices have consistently cited those practices as our best hope for sustained, substantive school improvement’. This is further accentuated by the vision of the National Commission on Teaching and America’s Future that student achievement will improve through partnerships between novice and experienced teachers (Fulton, et al, 2005).

Fullan (2005) proposes that learning communities ‘do not merely represent congeniality. Rather, they dig deeply into learning. They engage in disciplined inquiry and continuous improvement in order to “raise the bar” and “close the gap” of student learning and achievement’. The author explains that, through fostering a culture of collaboration and focusing on results, learning communities are highly beneficial to education. Swan and Shae (2005) suggest that social learning and learning communities should be a goal of online classes and communities.

Garrison, Anderson, & Archer (2000) indicate that an education community of inquiry consists of a community of individuals that construct meaning through three interdependent core elements: cognitive presence, social presence and teaching presence. The authors define cognitive presence as, “the extent to which the participants in any particular configuration of the community of inquiry are able to construct meaning through sustained communication” and social presence, which will be discussed in greater detail later in this chapter, as the ability of the individual to project themselves as ‘real people’ to others in the community. Garrison (2009) explains cognitive presence further by stating that, ‘cognitive presence reflects the intellectual climate and is associated with the facilitation of critical reflection and discourse’. Teaching presence consists of two major functions: designing the educational experience and facilitation. The overall educational experience occurs at the convergence of cognitive, social and teaching presence. Figure 4 is the graphical representation of the Community of Inquiry model.
The communication medium as shown in the Community of Inquiry (Figure 4) displays the importance of social presence, cognitive presence and teaching presence in the overall educational experience of students. The Community of Inquiry appears to incorporate the components necessary when attempting to develop connectedness in learning communities.

**Connectedness in Learning Communities**

Hart (2012) discusses social connectedness as a necessary component in a student’s success in online learning, states that persistent students feel that social connections can be created in online environments, and explains that connectedness to the online community
provides peer encouragement to students and promotes persistence. Angelino, Williams & Natvig (2007) state that ‘distance learners have many challenges to overcome such as physical separation, feeling of isolation, lack of support, and feeling disconnected; learning communities can help’ while Swan and Shae (2005) explain that, ‘the extent of emergence of a learning community is dependent on such processes, and that in turn, the emergence of a virtual learning community improves student satisfaction and learning’ in an online, learning environment.

Ivankova & Stick (2005) studied the process of building an online community in an advanced course for 34 doctoral-level students engaged in asynchronous learning. The study found that students who participated in the first course module felt that feedback received from peers and instructor was important in connecting them to the community. One student in this study stated that, “the more that we interact with our classmates and instructors, the better we get to know each other and this enriches our learning experiences and creates a sense of ‘community’ creating a new paradigm.”, while another student explained, ‘Encouragement and support on the part of the faculty members and students is crucial and keeps me on track in an online learning community’. Ivankova & Stick (2005) acknowledge that a community is not automatically built but takes effort on the part of students and instructor through feedback, engagement, common goals and interaction. For collegial learning to occur in the online environment in a learning community, all parties involved (student and instructors) must take an active role in creating the community (Simonson, et al., 2012, p. 200).

Connectedness in online learning is a factor that affects persistence (Hart, 2012). Ausburn (2004) explains that adult learners place a high value on two-way communication, announcements, and reminders in online course work; resulting in a greater community. Simonson et al. (2004) proposes that through the use of icebreakers, instructors can guide discussions that help students communicate information about themselves, thereby fostering a community among participants in a classroom. The author (Simonson et al., 2004, pps. 200-201) explains that cohort learning, discussion activities, and group work can help create this community for online learners and strongly suggests that taking the time to help establish the community, both by instructor and students, will promote a more successful online course with social interactions and connections. Garrison (2005) indicates that interaction, a major part of
connectedness in learning and in one’s learning environment, appears to have a direct impact upon one’s social presence.

### Social Presence

Garrison (2005) discusses the importance and implications of social presence in online courses and states that, ‘*social presence appears to be directly associated with the magnitude of interaction*’. Pelz (2004) defines social presences as when students in an online community, such as an online course, project their personal intricacies into discussions, exhibiting themselves as ‘real people’ and discusses that at least three forms of social presence exists: affective social presence, interactive social presence, a cohesive social presence. In other words, social presence is the level to which people are perceived as ‘real’ in online, mediated communication (Richardson & Swan, 2003).

Table 5 explains the three forms of social presence with their corresponding definitions as defined by Pelz (2004).

<table>
<thead>
<tr>
<th>Social Presence Form</th>
<th>Defined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective</td>
<td><em>The expression of emotion, feeling and mood.</em></td>
</tr>
<tr>
<td>Interactive</td>
<td><em>Evidence of reading, attending, understanding, thinking about other’s responses.</em></td>
</tr>
<tr>
<td>Cohesive</td>
<td><em>Responses that build and sustain a sense of ‘belongingness’, group commitment, or common goals and objectives.</em></td>
</tr>
</tbody>
</table>

Table 5

The three forms of social presence, affective, interactive and cohesive, shown in table 5 are ways in which the user can appear ‘real’ in the online learning environment (Richardson & Swan, 2003). Garrison (2005) states that ‘*social interaction and presence may create the condition for sharing and challenging ideas through critical discourse, but it does not directly create cognitive presence or facilitate a deep learning approach*’. McLoughlin and Lee (2007)
insist that ‘with high connectivity and ubiquitous, demand driven learning, there is a need to expand our vision of pedagogy so that learners are active participants or co-producers rather than passive consumers of content, and so that learning is a participatory, social process supporting personal life goals and needs’. Social presence is a catalyst that affects a student’s cognitive absorption which ultimately affects satisfaction (Leong, 2011).

Cognitive Absorption and Satisfaction

Cognitive absorption, as defined by Saadé & Bahli (2005), is a ‘state of deep involvement’ in a course delivered through an online, E-Learning system, and discusses that three major antecedents of cognitive absorption exist: perceived usefulness, perceived ease of use, and behavioral intention. These three antecedents, derived from the Technology Acceptance Model or TAM (Davis, 1989), should be perceived as positive if cognitive absorption is to be positive (Saadé & Bahli, 2005). In a recent study, Leong (2011) surveyed 294 students enrolled in 19 online or hybrid courses at University of Hawaii System and Hawaii Pacific University during spring and fall semesters in 2005 and finds that social presence has a non-significant effect on overall satisfaction. However, the results of this study imply that social presence strongly affects cognitive absorption which in turn positively affects satisfaction (Leong, 2011).

Research has shown that satisfaction is affected by social presence in students taking online courses (Moore, Masterson, Christophel, and Shea, 1996). Rouis (2012) states that, ‘Facebook usage would develop students’ satisfaction with friends and family, which could enhance their academic performance’. Student contact and interaction with their instructor is a primary contributor to a student’s satisfaction in the online environment; instructor presence and the instruction are more influential to student satisfaction than the technology itself (Johnston, Killion, and Oomen, 2005).

Hart (2012) explains that ‘satisfaction as a facilitator of persistence is a consistent finding when included as a variable. Persistent students voice satisfaction with the quality of the program, interactions with students and peers, the relevancy of the course to individual needs, and with the learning environment itself’. Satisfaction in taking an online course delivered
through an E-Learning system is amongst the many factors that influence a student’s success (Hart, 2012; Angelino, Williams & Natvig, 2007). Bellinger (2007) and Westbrook (2006) suggest that E-Learning, in its present form, may not reach the desired student satisfaction levels. Mohr, Holtbrugge, and Berg (2012) state that 'one of the factors that might explain the low satisfaction with e-learning among users is a mismatch between the expectations of learners and what existing e-learning solutions deliver’. Student satisfaction in online courses and online, E-Learning systems appears to be a contributing factor to attrition and persistence (Hart 2012).

Attrition and Persistence

Picciano (2002) explains that, “attrition is a complex phenomenon dependent on a myriad of academic, social, and personal factors including the academic program (graduate, undergraduate, continuing education), admissions criteria (selective, open admissions), and the nature of the student (mature, motivated, command of basic skills)”. Attrition rates and factors affecting attrition in students taking university courses, regardless of modality, are pressing issues facing institutions of higher learning (Tresman, 2002; Cookson, 1990; Simpson, 2004). The economic ramifications for high attrition rates can have negative effects on an institution (Tresman, 2002; Simpson, 2004). Moody (2004) expresses that, “The costs for development, delivery, and assessment, as well as lost tuition revenue, result in wasted expenditures for the institution”.

There are many factors that affect attrition rates in higher education, regardless of whether the courses are delivered face-to-face or online, but attrition rates are higher in courses delivered online (Carr 2000; Angelino, Williams & Natvig, 2007). To be more specific, Carr (2000) states that most universities report a 10 – 20% higher completion rates in traditional courses than in distant learning with some reporting less than half of the students persist. Carr (2000) also explains that there is significant variation in attrition throughout institutions of higher learning; some reporting 80% and higher completion rates while others are less than 50%. Simpson (2004), reports that 13% of students drop out before the course begins and suggests that 38% of students do not submit their first assignments.
Hart (2012) discusses learning styles, computer skills, college status and graduating term, difficulty in accessing resources, isolation/decreased engagement, poor communication and other non-academic issues as factors affecting attrition in students enrolled in online courses. The literature regarding attrition and persistence as it pertains to students in higher education indicates several determining factors. Table 6 was developed in order to detail the factors that affect attrition in online courses and identify supporting literature/studies.

<table>
<thead>
<tr>
<th>Factors Affecting Attrition in Online Courses</th>
<th>Supporting Literature/Study</th>
</tr>
</thead>
</table>
| Learning Style                              | The three most common and generally accepted learning styles are auditory, visual, and kinesthetic (Gilakjani and Ahmadi, 2011; Felder and Silverman, 1988).
Felder and Silverman (1988) explain that ‘visual and auditory learning both have to do with the component of the learning process in which information is perceived, while kinesthetic learning involves both information perception (touching, tasting, smelling) and information processing (moving, relating, doing something active while learning)’.
| Computing Skills                            | Kruse (2002) explains that the many of technical issues that students experience due are often due to ‘technophobia’.
Boyd (2004) states that, ‘in addition to having the hardware, students must also have the basic computer and Internet skills to effectively navigate the online environment’ and that many students do not accurately estimate their computing skills.
<p>| College Status and Graduating Term          | Hart (2012) states that, ‘the less experience a student has with education, the more likely they are to withdraw’. |</p>
<table>
<thead>
<tr>
<th>Difficulty in Accessing Resources</th>
<th>Kruse (2002) explains that the majority of technical issues that students experience are related to the unavailability of technologies.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolation/Decreased Engagement</td>
<td>Kruse (2002) states that, ‘Reduced social and cultural interaction can be a drawback. The impersonality, suppression of communication mechanisms such as body language, and elimination of peer-to-peer learning that are part of this potential disadvantage are lessening with advances in communications technologies’. Bunn (2004) states that students consider feelings of isolation in online environment as barrier to their success.</td>
</tr>
<tr>
<td>Poor Communication</td>
<td>Dunn and Dunn (1979) insist that ‘motivated, persistent, responsible people need to be told what they are required to learn (their ‘objectives’ or tasks), what they may use as resources, how they may demonstrate their acquired knowledge or skill, and where to get help if it is needed’. Bunn (2004) list 1) lack of, or late notification about changes to the program; 2) slow or inconsistent feedback on assignments; 3) difficulties in contacting on-campus staff; and 4) little contact from personal tutors.</td>
</tr>
<tr>
<td>Other Non-Academic Issues</td>
<td>Boyd (2004) discusses time constraints, family support, and physical workspace as environmental factors contributing to a student’s success in online courses. Personal drive and motivation are also determining factors in a student’s online success (Bunn, 2004).</td>
</tr>
</tbody>
</table>

Table 6 presents factors that affect attrition as proposed by Hart (2012). A students’ learning styles, computer skills, college status and graduating term, difficulty in accessing resources, isolation/decreased engagement, poor communication and other non-academic issues affect attrition which in turn have negative economic effects on institutions of higher learning (Hart, 2012; Tresman, 2002; Simpson, 2004).
In order to decrease attrition rates in higher education, institutions must understand the facilitators of persistence. Hart (2012), through a comprehensive literature review of peer-reviewed journals, reviewed and synthesized current literature regarding factors of persistence and attrition in online education. Upon synthesis of the literature, Hart (2012) states that, ‘although students generally report being satisfied with the online environment and learning outcomes are similar to those of the traditional classroom, challenges exist which can result in an inability to complete a course and, in turn, an inability to complete the program.’

Based on her research, Hart (2012) reveals nine facilitators of persistence: college status, graduating term, comfort with online course work; flexibility, asynchronous format, time management; goal commitment; GPA; quality of interactions and feedback; satisfaction and relevance; self-efficacy, personal growth, self-motivation; social connectedness or presence; and support.

College Status, Graduating Term, Comfort with Online Course Work

College status, graduating term, and/or comfort with online course can affect a student’s persistence in taking an online course (Hart, 2012). Hart (2012) explains that, ‘the less experience a student has with education, the more likely they are to withdraw’. Students must have a level of comfort when taking online courses in order to be successful and should fully examine their intentions in taking online courses (Bunn, 2004).

Flexibility, Asynchronous Format, Time Management

Hart (2012) discusses flexibility, asynchronous formats, and time management as another facilitator of persistence. Students often consider online courses flexible (Bunn, 2004). The flexibility of online courses often affects a student’s decision to take online courses but successful course completions greatly relies on the students time management skills (Boyd, 2004). He discusses time management as an environmental factor in a student’s success in taking online courses and explains that students are often required to log in to their E-Learning
systems multiple times per week to participate in asynchronous discussions, as well as complete required homework.

Goal Commitment

Student commitment to fulfilling the goal of completing an online course is another facilitator of persistence (Hart, 2012). Personal drive and motivation are determining factors in a student’s online success (Bunn, 2004). Boyd (2004) explains that, ‘a key motivational factor is to have clear educational goals and a clear understanding as to why one is taking a particular course or program’. Personal commitment to succeed is important for students to achieve their education goals (Rovai, 2003).

GPA

A student’s grade point average can be a facilitator of persistence (Hart, 2012). Hart (2012) suggests that a student’s GPA can be a predictor for success in online learning, stating that, ‘students with a higher GPA are often able to better maneuver through the electronic environment and adopt successful behaviors that allow them to excel in the online course’.

Quality of Interactions and Feedback

Quality of online class interaction and feedback can be a deciding factor on whether a student is successful in an online course (Hart, 2012). Simonson, et. al (2012, p. 126) explain that, unlike the instantaneous communication that is available in the traditional classroom environment, feedback can be delayed in the online environment, but they stress the importance of prompt feedback. They contend that feedback should not only be delivered promptly, but be informative, stating that ‘feedback that provides guidance on what was done well and on areas for improvement adds to the success of the distance learning experience’ (Simonson, et. al, 2012, p. 202).
Satisfaction and Relevance

Hart (2012) explains that ‘satisfaction as a facilitator of persistence is a consistent finding when included as a variable. Persistent students voice satisfaction with the quality of the program, interactions with students and peers, the relevancy of the course to individual needs, and with the learning environment itself’.

Self-Efficacy, Personal Growth, Self-Motivation

Due to the flexible nature of online courses, self-efficacy, personal growth and self-motivation can be pivotal points in a student’s success in online courses (Hart, 2012). Bandura (1994) defines self-efficacy as ‘people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives’ and explains that this belief drives the way in which people feel, think, motivate themselves and behave. These feelings and behaviors include personal drive and motivation, which are determining factors in a student’s online success (Bunn, 2004).

Social Connectedness or Presence

Successful online students are often those that are willing ‘meet’ virtually and not isolate themselves in the online environment (Boyd, 2004). Additionally, Baker (2010) defines Social presence ‘as the feeling that group members communicate with people instead of impersonal objects’ and indicates that more frequent communication between instructors and students reduces transactional distance, bridging the gap between instructors and learners in the online environment.

Support

Support in a student’s life, in and out of the classroom, can be a facilitator of persistence. Family, friends, co-workers and classmates all play roles in a student’s success.
These individuals can provide a support component for the student and an encouragement when the student is undergoing difficult times (Hart, 2012).

Attrition rates and factors affecting attrition in students taking university courses, regardless of modality, are pressing issues facing institutions of higher learning (Tresman, 2002; Cookson, 1990; Simpson, 2004). The economic ramifications for high attrition rates can have negative effects on an institution (Tresman, 2002; Simpson, 2004). Understanding the facilitators of persistence: college status, graduating term, comfort with online course work; flexibility, asynchronous format, time management; goal commitment; GPA; quality of interactions and feedback; satisfaction and relevance; self-efficacy, personal growth, self-motivation; social connectedness or presence; and support revealed by Hart (2012) along with the factors affecting attrition (table 5) are important to institutions of higher learning. Understanding these issues will lessen the negative economic impact to institutions of higher learning and will assist encourage success in students’ in future online courses (Hart, 2012; Tresman, 2002; Simpson, 2004). According to Hart (2012), many facilitators of persistence are enabled by student and instructor uses of Web 2.0 technologies.

Web 2.0 Technologies

Hart (2012) reveals multiple facilitators of persistence; many of these facilitators of persistence involve features addressed through the use of Web 2.0 technologies. Web 2.0 can be demonstrated through its’ openness, user participation, knowledge sharing, social networking and collaboration (Alexander, 2006; Brown & Adler, 2008; Downes, 2005; Richardson, 2009). While Web 2.0 technologies are becoming ubiquitous in the lives of digital natives, many university instructors have yet to integrated these technologies into their courses; reporting access problems, technical glitches, openness, time, and lack of technical support as barriers to integrating and using Web 2.0 technologies in teaching (An & Williams, 2010).

The literature discusses the potential of Web 2.0 technologies in transforming education (Alexander, 2006; Bonk, 2009; Brown & Adler, 2008; Downes, 2005; Richardson, 2009). Brown & Adler (2008) state that ‘the most profound impact of the Internet is its ability to
support and expand the various aspects of social learning’, and, with the availability of Web 2.0 technologies, the ‘line between consumers and producers of content’ has been blurred. The authors discuss that open source communities have established social learning communities that allow community members to contribute to projects. These projects include software, websites such as Wikipedia, and other learning resources. They further explain that the use of Web 2.0 tools such as blogs, wikis, social networks, tagging systems, mashups and content sharing sites, engage learners and create a social learning Internet.

Another potential of Web 2.0 technologies in transforming education resides in social writing platforms such as blogging (Alexander, 2006; Downes, 2005). Downes (2008) discusses many examples of using educational blogging and reports that students are often enthusiastic in their comments and that students gain great experiences in writing online while Alexander (2006) states that ‘blogging has become, in many ways, the signature item of social software, being a form of digital writing that has grown rapidly into an influential force in many venues, both on- and off-line’.

Web 2.0 technologies have changed the way that knowledge is created and disseminated (Brown & Adler, 2008). Web 2.0 technologies have created an outlet for learning that has surpassed other channels available in the past through its ability to provide ‘interactive, inclusive, active, and collaborative teaching and learning’ (Lin & Ward, 2010). These technologies include (and are not limited to): blogging, discussion boards, social networking, wikis, and social bookmarking providing knowledge sharing and opportunities for collaboration to create venues for instructors and students to come together, to learn from each other, and add to bodies of knowledge (Brown & Adler, 2008).

In the days prior to these technologies, typical internet users were simply consumers of knowledge and individuals or agencies with websites and programming knowledge were knowledge producers (Brown & Adler, 2008). Alexander (2006) proposes that ‘Web 2.0’s lowered barrier to entry may influence a variety of cultural forms with powerful implications for education, from storytelling to classroom teaching to individual learning’. Web 2.0 users are contributors of knowledge; often times calling on personal experiences and knowledge that create an extremely diversified information network (Brown & Adler, 2008; Alexander, 2006).
Johns (2009) states that ‘blogs, user-generated content, podcasts, social networks, virtual worlds, peer reviews, all differentiate today’s web communication function from yesterday’s static Internet world’. As Brown and Adler (2008) indicate, social networking is one of the Web 2.0 technologies providing opportunities for knowledge sharing and collaboration. Social networking has gained much popularity in education (Waycott, Gray, Thompson, Sheard, Clerehan, Richardson, and Hamilton, 2010).

Social Networking Sites

The internet has created an outlet for social networks. Social networking sites can help individuals connect based on common interests (Ahn, Han, Kwak, Moon, and Jeong, 2007). The authors contend that social networking sites can be utilized to establish a forum for discussion as well as exchange photos and personal news. Social networking, for this study, is defined as a site that allows users to build profiles in order to represent themselves and create and maintain relationships with other people (Ellison, Steinfield, & Lampe, 2007). Simonson et al. (2004) states that ‘social networking sites promote the development of online communities through posting of personal information, journals, photos, likes and dislikes, and provided communication channels for persons with similar interests to meet virtually’.

Social networking, a Web 2.0 tool, is being used at an increasing rate in higher education (Waycott, et al., 2010). Thompson & Hughes (2012) explain that Web 2.0 technologies have become an integral part of education due to their conveniences and wide-spread accessibility, and, referring to online social networking, states that “today’s social interaction has been altered and expanded by changes in the way individuals make meaning, as well as the materiality of texts”.

Ellison, et al. (2007) explain that different social networking sites have differing population focuses. Facebook, which focuses on college student populations, is one of the most successful of social networking platforms (Ellison, et al., 2007). Since it was founded in 2004, Facebook has more than 500 million active users with approximately half of these users logging into the social network daily (“Face Book Statistics," 2010). Another example of an online
social network that has experienced success is LinkedIn.com. LinkedIn is orientated to a career related framework (Ellison, et al., 2007), and is the largest professional social network, boasting 161 million members in over 200 countries as of March 2012 (“LinkedIn Statistics”, 2012). E-Learning systems, the major delivery means for online course delivery, often have Web 2.0 technologies embedded that include social networking.

E-Learning Systems

Social networking has potential for utilization by organizations and e-learning (Grippa, Francesca, et al., 2010; Womble, 2008). Ross-Gordon (2011) states that the, ‘NCES reported in 2008 that at least two-thirds of two-year and four-year Title IV degree-granting institutions offered online courses, blended/hybrid courses, or courses offered in other distance education formats for college-level credit’. Similarly, Allen and Seamen (2011) state that 31% of surveyed college and university students report that they are taking at least one online course. E-Learning, the method for delivering online courses, promises to provide experiences that accommodate the three major learning styles: visual learners, auditory learners, and kinesthetic learners (Kruse, 2002). E-Learning systems provide an electronic opportunity for the presentation and transference of knowledge and can be defined as a digital management system that allows for instructors and students to meet virtually for the delivery of knowledge (Herridge Group, 2003).

Institutions of higher learning utilize E-Learning systems for a variety of reasons: reduced cost for delivery, increased retention, delivery in a consistent manner, capture and communication of expert knowledge, and a proof of overall completion of key content areas (Kruse, 2002). The author explains that learners have many individual advantages in using e-learning: availability, self-pacing, and interactivity; further explaining that these benefits are accentuated through an e-learning systems ability to accommodate the three major learning styles through integrations into Web 2.0 technologies creating an environment in which many universities realize this need and are pushing courses into a more student centered, online environment.
E-learning has become the norm in delivery of course content, providing a cost savings in many situations (Kruse, 2002). During the fall term of 2008, it is reported that more than 4.6 million students took at least one online course, representing a 17% increase in online course enrollment since fall of 2007 (Allen & Seaman, 2009). In order to meet demand in online course enrollment, colleges and universities have begun offering entire accredited degrees, up to graduate degree programs, completely online (Schulman and Sims, 1999).

Chapter Summary

Institutions of higher learning utilize E-Learning systems for a variety of reasons: reduced cost for delivery, delivery in a consistent manner, capture and communication of expert knowledge, and a proof of overall completion of key content areas (Kruse, 2002). As the literature has shown, there are many factors that affect attrition rates in higher education, and attrition rates are higher in courses delivered online (Angelino, Williams & Natvig, 2007; Hart 2012), and as Leong (2011) explains, social presence strongly affects cognitive absorption which in turn positively affects satisfaction. The synthesis of the literature implies that, since satisfaction is a predictor of persistence (Hart, 2012); there is great need to understand factors that create high satisfaction in online learning.

The literature review reveals that discussions regarding how, or if, satisfaction levels are affected through dual usage of online social networking and E-Learning were not present. This study attempts to determine this connection by investigating whether the use of social networking by students in an e-learning environment and the use of portals connecting the two, make a significant difference in the student’s satisfaction level with their e-learning activities. Chapter 3 will discuss the research methodology that was used in this study.
Chapter 3: Research Methodology

The purpose of this study is to investigate student use of online, social networks (Facebook, LinkedIn, etc.), E-Learning course content management systems (Blackboard and Desire 2 Learn), and to determine the extent of student participation in each system and the relationship, if any, between these systems. Objectively, this study is designed to: 1) determine if greater E-Learning satisfaction is derived through increased use of online social networking sites; 2) determine, through self-reporting, how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&M University-Texarkana use social networking during face-to-face class time; and 3) collect data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa.

It is expected that this study will determine that:

- Students with increased social networking usage will have increased satisfaction with E-learning.
- Students who have PC tablets spend more time on social networking sites during class time than those not provided a PC.
- Students who use social networking sites spend less time in their course content management system than students who do not use social networking sites.
- Students who use social networking sites derive greater satisfaction from their course content management system than students who do not use social networking sites.
- Students who use social networking sites would prefer to have their social networking sites available through the E-Learning environment and vice-versa.

Research Design

Research exists that studies the usage of persons utilizing E-Learning systems as well as social networking usage. The literature also provides studies regarding satisfaction levels of users utilizing E-Learning and online, social networking websites. However, upon review of the
literature, discussions of how time and satisfaction levels are affected through dual usage of online, social networking and E-Learning were not present.

Trochim & Donnelly (2008) discuss that the design of research could be referred to as its structure; the research design discusses the how the elements of a project fit together. The design chosen for this study was non-experimental in nature and was a combination of descriptive and relational. Non-experimental research can be defined as research that ‘involves variables that are not manipulated by the researcher and instead are studied as they exist’ (Belli, 2008). Trochim & Donnelly (2008) define descriptive studies as those that ‘are designed primarily to describe what is going on or what exists’ and relational studies as those that ‘look at the relationships between two or more variables’.

This study employed a web-based survey that was used to assess whether students had greater E-Learning satisfaction derived through increased use of online social networking sites, determine how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&M University-Texarkana use social networking during face-to-face class time, and collect data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa. Based on the results of the survey, descriptive statistics was used to determine:

- Frequency of student participation in social networking during class time.
- How often students access social networking sites.
- How often students access E-Learning environment.
- Satisfaction levels of students in their E-Learning environment.
- E-Learning environment satisfaction levels of students who use social networking.
- E-Learning environment satisfaction levels of students who do not use social networking.
- Student acceptance of social E-Learning environments.
Research Method

The research method is composed of three distinct areas of interest: social E-Learning portals, tablet PC classroom usages, and overall satisfaction involving social networking and E-Learning. The method was developed to address the four hypotheses being tested in this study.

Trochim & Donnelly (2008) define research questions as the ‘central issue being addressed in the study, which is typically phrased in the language of theory’ and hypothesis as ‘a specific statement of prediction’. The proceeding section displays the research questions used for this study, mapped to their corresponding hypothesis. See Table 1 in chapter 1 for a full list of research questions.

\( H_1: \) Students who spend more time in their course content management system have higher GPAs.

Research Questions:

How often do students access E-Learning environment.

\( H_2: \) Students who spend more time on social networking sites have lower GPAs.

Research Questions

How often students access social networking sites.

\( H_3: \) Students who use social networking sites spend less time in their course content management system than students who do not use social networking sites.

Research Questions

How often students access social networking sites.

How often students access E-Learning environment.

\( H_4: \) Students who use social networking sites derive greater satisfaction from their course content management system than students who do not use social networking sites.
How often students access E-Learning environment.

Satisfaction levels of students in their E-Learning environment.

E-Learning environment satisfaction levels of students who use social networking.

What is student’s acceptance of social E-Learning environments (portals between social networking and E-Learning Systems)?

Snelbecker (1999) discusses that ‘theory refers to an organized set of propositions that are syntactically and semantically integrated (that is, that follow certain rules by which they can be logically related to one another and to observable data) and that serve as a means of predicting and explaining observable phenomena’. This study follows a research model that first discovers whether a student is a social networking user or whether a student utilizes a mobile computer, or both. The model is next divided by the students’ level of intensity. If the student is labeled as a high-intensity user, it is expected that they will have increased E-Learning satisfaction and increased time spent in their E-Learning environment. On the contrary, students labeled as low-intensity users are expected to experience less E-Learning satisfaction and spend less time in their E-Learning environments. Figure 5 is a graphical representation of the tested research model.
It is acknowledged that demographic differences between the populations may exist and are important to the study. Additionally, it is acknowledged that demographic differences may occur within each university. Comparison statistical tests will be performed on the data to determine whether the respondents are different demographically between universities, and students from same universities will be compared to demographic data available on students (e.g. SD BOR Fact Book). All historic student data presented in this dissertation was derived from
the South Dakota Board of Regents Fact Book (Fiscal Year 2011) and the Texas A&M University Texarkana Accountability Report (January 2011), unless otherwise noted.

Dakota State University had a total class population of 3,101 (1,852 degree seeking) students, and Texas A&M University Texarkana reported a unduplicated total headcount of 1,803 students. Figure 6 provides a graphical representation of the student population for Dakota State University and Texas A&M University Texarkana for the fall semester of 2010.

![Degree Seeking Student Population for Dakota State University and Texas A&M University Texarkana]

The current level of students at each university also provides demographic differences between the two populations. Texas A&M University Texarkana had 126 freshman (7%), 138 sophomores (7.7%), 387 juniors (21.5%), 579 seniors (32.1%), and 573 (31.8%) graduate students (to include master and doctoral students) in the fall semester of 2010 (figure 7). Dakota State University reported 656 freshman (35.4%), 308 sophomores (16.6%), 280 juniors (15.1%), 379 seniors (20.5%) and 229 (12.4%) graduate (to include master and doctoral students) degree seeking students for the same fall semester (figure 8).
Ethnicity also provides demographic differences between the two populations at the surveyed institutions. Texas A&M University Texarkana reported 1,290 White, 275 African American, 133 Hispanic, 20 Asian, and 68 classified as Other. Figure 9 provides a graphical representation for student ethnicity at Texas A&M University Texarkana. Dakota State University reported 58 Hispanics, 32 American Indian or Alaskan Natives, 56 Asian, Native Hawaiian, or other Pacific Islander, 72 African American and 2,663 white in the fall semester of
2010. Figure 10 provides a graphical representation for student ethnicity at Dakota State University.

Texas A&M University Texarkana Students by Ethnicity

![Texas A&M University Texarkana Students by Ethnicity](image)

Figure 9

Dakota State University Students by Ethnicity

![Dakota State University Students by Ethnicity](image)

Figure 10
Survey Design and Data Collection

Trochim & Donnelly (2008) discuss that there are three primary issues when writing questions for survey research: 1) ‘Determining the questions content, scope, and purpose; 2) choosing the response format that you use for collecting information from the respondent; and 3) figuring out how to word the questions to get at the issue of interest’. Each of these three issues for writing questions for survey research was taken into account when developing the survey used for this research.

The Provost office at Texas A&M University Texarkana emailed all faculty and requested each instructor to include a link to the research study survey in their courses. At Dakota State University, Dr. Wayne Pauli emailed all students, requesting that they participate in the study. The survey, deployed through Survey Monkey was available at both institutions for approximately 4 weeks.

Once students received the survey link and clicked on the survey, they were first presented with a qualifying question; the question inquired whether or not a student used mobile computing. Students were asked to answer questions to the best of their ability (self-reported data). If the student answered the question with a ‘Yes’, they were allowed to participate in the study, otherwise, their participation was terminated. Also present on the survey’s entry page was the informed consent form (Appendix E).

Students at Dakota State University and Texas A&M University – Texarkana were asked a series of questions to determine their E-Learning/Social networking usages, satisfactions of usages and interest/interpretation of a series of images along with demographic questions. The demographic section of the survey was used to determine if a good sample of the universities population was represented. Appendix D shows the entire survey that students completed.

Texas A&M University Texarkana had 301 students participate in the research study and Dakota State University’s participants numbered 456. Figure 11 shows a graphical representation of the number of students by university that participated in the survey.
Data Analysis

Students at Dakota State University and Texas A&M University – Texarkana were asked a series of demographic questions along with questions to determine their E-Learning/Social networking usages, satisfactions of usages and interest/interpretation of a series of images. The demographic section of the survey was used to determine if a good sample of the universities population was represented.

Table 7 describes the data types of each survey question and their corresponding accuracy levels.

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Data Type</th>
<th>Accuracy level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6</td>
<td>Qualitative</td>
<td>High</td>
</tr>
<tr>
<td>7, 8, 9</td>
<td>Quantitative</td>
<td>Low</td>
</tr>
<tr>
<td>10-15</td>
<td>Quantitative</td>
<td>High</td>
</tr>
</tbody>
</table>

Table 7
Hypothesis Testing and Statistical Analysis

Descriptive statistics were used to categorize the central tendency and variation of each variable for which data is collected and will be presented in summary tables as part of the study. Certain features were noted, which include characterization of the shape of the data distribution, the presence of skewness and the detection of any outliers.

Minitab 15, Revision 2 was utilized to perform three major statistical analysis techniques for hypothesis testing. The list of statistical techniques included the following:

1) Single Population Hypothesis Tests of the Mean or Proportion
2) Statistical Inferences from the Comparison of Two Populations
3) Multiple Regression Analysis, including the use of Qualitative (Dummy) Variables

The demographic results from the survey of DSU students include student age, ethnicity, and gender. Using a single population hypothesis test of the mean determined whether the average age of the students responding to the survey is equal to the average age of students attending DSU and TAMUT. This indicated any significant differences between the sample and the underlying population and between the samples.

A comparison of the two populations, DSU and TAMUT students, determined if significant differences exist between the two schools in the areas of GPA, ethnicity, social networking preferences, and time spent on social networking and E-Learning. Comparison of mean results of the population determined through t-tests and correlation testing.

Multiple regression techniques were employed to determine if the features identified in the survey questions are significantly correlated with student attitude or use of social networking sites. If the regression analysis results indicated that more than one of these factors is significant, the parameter estimates were compared to determine which source of use (school, work, or home) has the most impact compared to the others.

In addition, qualitative variables were constructed for analysis. In this way, gender differences between the respondents are reported, by using a gender interaction term in the regression analysis, also known as a gender dummy variable. Other qualitative variables included identification of one or more specific social networking sites (Facebook, Myspace, etc.)
to determine whether site use differences significantly influence the statistical results regarding student attitude towards and use of social networking. Table 8 outlines the above mentioned statistical tests. Chapter 4 will discuss the findings of this study as described in this section.

Statistical Tests Employed by this Study.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistical Technique</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age/Gender</td>
<td>Hypothesis Test of the Mean</td>
<td>Simple Random Sampling</td>
</tr>
<tr>
<td>Populations Similar/Different</td>
<td>Statistical Inferences from the Comparison of Two Populations</td>
<td>Comparison of Mean Results of the Population (t-test);</td>
</tr>
<tr>
<td>Student Attitude</td>
<td>Multiple Regression Analysis</td>
<td>Parameter Estimates (t-test)</td>
</tr>
<tr>
<td>Use of Social Networking Sites</td>
<td>Multiple Regression Analysis</td>
<td>Parameter Estimates (t-test); Pearson Correlations</td>
</tr>
</tbody>
</table>

Table 8

Validity

This survey employed a pre-test in order to identify potential wording or interpretation issues, which was used to reveal errors in delivery and question bias. Questions were revisited and corrected based on the errors that were revealed.

Construct validity can be defined as ‘the degree to which inferences can legitimately be made from the operationalizations in your study to the theoretical constructs on which those operationalizations are based’ (Trochim & Donnelly, 2008). Construct validity includes the degree to which inferences and conclusions can be drawn based on the operationalizations of the constructs (Trochim, 2006). Construct validity can be threatened in a variety of ways, and this research utilized multiple techniques to minimize threats. Table 9 shows threats to construct validity and outlines how these threats were minimized.
Chapter Summary

The purpose of this study was to investigate student use of online, social networks (Facebook, LinkedIn, MySpace, etc.) and E-Learning course content management systems (Blackboard and Desire 2 Learn) and to determine the extent of student participation in each system and the relationship, if any, between these systems. Through the use of online surveys delivered to students at Texas A&M University Texarkana and Dakota State University, data was collected regarding student utilization of tablet PCs during face-to-face classroom instruction, student opinion of portals between E-Learning systems and social networks, and current satisfaction levels of students in their online courses. Chapter four will reveal the results of the survey and determine hypotheses results.
Chapter 4: Data Collection, Analysis and Findings

Demographics of the Population - Gender

Dakota State University reports that 1481 male and 1620 female students attended the university in the fall semester of 2010; males representing 47.76% of the population while females represented 52.24%. Texas A&M University Texarkana reports that 531 male and 1374 female students attended in the fall semester of 2010; males representing 27.87% of the overall university student population while females represented 72.13%. Student survey participation yielded 232 males and 220 females at Dakota State University, males representing 51.33% and females 48.67% of survey participants while students completing the survey at Texas A&M University Texarkana were 51 male, or 17%, and 249 females, or 83%. Figure 12 displays charts of student survey participation by university as well as university total population breakdown by gender.

**Student Participation and University Populations by Gender**

<table>
<thead>
<tr>
<th>DSU Survey Participants</th>
<th>DSU Fact Book 2010 By Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1481</td>
</tr>
<tr>
<td>Female</td>
<td>1620</td>
</tr>
<tr>
<td>Total</td>
<td>3101</td>
</tr>
<tr>
<td>Male</td>
<td>232</td>
</tr>
<tr>
<td>Female</td>
<td>220</td>
</tr>
<tr>
<td>Total</td>
<td>452</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TAMUT Survey Participants</th>
<th>TAMUT Fall 2010 By Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>531</td>
</tr>
<tr>
<td>Female</td>
<td>1374</td>
</tr>
<tr>
<td>Total</td>
<td>1905</td>
</tr>
<tr>
<td>Male</td>
<td>51</td>
</tr>
<tr>
<td>Female</td>
<td>249</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
</tr>
</tbody>
</table>

Figure 12
The following will be used when discussing P-Values throughout the remainder of this chapter:

* denotes that the mean is significantly different from 0 at a 99% confidence level (P Value < .01).
** denotes that the mean is significantly different from 0 at a 95% confidence level (P Value < .05).
*** denotes that the mean is significantly different from 0 at a 90% confidence level (P Value < .10).

In order to determine whether the sample accurately reflects the demographic of the population, a two-sample T-Test was calculated on the university and participant gender. In converting the text to numeric data for gender in Minitab, male was replaced with ‘0’ and female with ‘1’. Figure 13 shows that 48.7%* of students completing the research survey at Dakota State University were female (51.3% males) while 83%* of respondents at Texas A&M University – Texarkana were female (17% male).

**A. Comparison of the Demographics of the Samples from the Universities**

<table>
<thead>
<tr>
<th>Two-sample T for gender</th>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which university do you attend?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dakota State University</td>
<td>452</td>
<td>0.487</td>
<td>0.5</td>
<td>0.024</td>
</tr>
<tr>
<td>Texas A&amp;M University - T</td>
<td>300</td>
<td>0.83</td>
<td>0.376</td>
<td>0.022</td>
</tr>
</tbody>
</table>

Difference = \( \mu \) (Dakota State University) - \( \mu \) (Texas A&M University - Texarkana)

Estimate for difference: -0.3433

95% CI for difference: (-0.4062, -0.2804)

T-Test of difference = 0 (vs not =): T-Value = -10.72  P-Value = 0.000  DF = 738

Figure 13
The results clearly indicate the two universities are quite distinct in terms of their ratios of females to male. The 95% Confidence Interval for the difference between the two ratios indicates a significant difference of as little of 28% and as much as 41% more females as a proportion of all students at Texas A&M University – Texarkana compared to DSU.

Demographics of the Population - Age

Average age of participants was also calculated in order to determine whether a true representation of the student population was reached for the survey. The two measures of central tendency used, mean and median, were 27.0821 and 20, respectively, while the measures of variation, range and standard deviation, were 40 and 9.88061. Figure 14 also includes average gender information for students completing the survey. The results show that the two measures of central tendency used, mean and median, were .622047 and 1, respectively, while the measures of variation, range and standard deviation, were 1 and .485194.

Average Age/Gender of All Students Completing the Survey:

<table>
<thead>
<tr>
<th>Average Age of Students Completing Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean of AvgAge = 27.0821</td>
</tr>
<tr>
<td>Median of AvgAge = 20</td>
</tr>
<tr>
<td>Range of AvgAge = 40</td>
</tr>
<tr>
<td>Standard deviation of AvgAge = 9.88061</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Average Gender of Students Completing Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean of gender = 0.622047</td>
</tr>
<tr>
<td>Median of gender = 1</td>
</tr>
<tr>
<td>Range of gender = 1</td>
</tr>
<tr>
<td>Standard deviation of gender = 0.485194</td>
</tr>
</tbody>
</table>
Figure 15 shows that the average participant at Dakota State University was 25.33\* years of age, while 29.8\* was the mean age of students that participated in the survey at Texas A&M University – Texarkana.

<table>
<thead>
<tr>
<th>Two-sample T for Average Age</th>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which university do you attend?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dakota State University</td>
<td>455</td>
<td>25.33</td>
<td>9.04</td>
<td>0.42</td>
</tr>
<tr>
<td>Texas A&amp;M University - T</td>
<td>301</td>
<td>29.8</td>
<td>10.5</td>
<td>0.61</td>
</tr>
</tbody>
</table>

Difference = mu (Dakota State University) - mu (Texas A&M University - Texarkana)
Estimate for difference: -4.452
95% CI for difference: (-5.907, -2.998)
T-Test of difference = 0 (vs not =): T-Value = -6.01  P-Value = 0.000  DF = 573

The results clearly indicate the two universities are quite distinct in terms of their average age. The 95% Confidence Interval for the difference between the two averages indicates a significant difference of as little of 3 years and as much as 5.9 years at Texas A&M University – Texarkana compared to DSU.

**B. Demographic Testing**

Utilizing the South Dakota Board of Regents Fact book, it was determined that the average age of students attending Dakota State University in the Fall 2011 semester was 25.7 years of age, and, based on information detailed in Figure 15, a one-sample t-test was performed. Of the 455 participants answering this survey question at Dakota State University, the average age of participants was 25.33 (with a standard deviation of 9.04). The standard error of the mean was .424 and a 95% confidence interval of 24.497 and 26.163. Figure 16 displays the results of this test.
There appears to be no significant difference between the survey and the underlying population. The 95% Confidence Interval for the difference between the two averages indicates a difference of as little of 24.497 years and as much as 26.163 years old for survey participants at Dakota State University.

A report run by Texas A&M University – Texarkana (Department of Institutional Effectiveness, 2012) reveals the mean age of students attending the university in the fall semester of 2011 was 30.3 years old, and, based on information detailed in Figure 15, a one-sample t-test was performed. Of the 301 participants answering this survey question at Texas A&M University - Texarkana, the average age of participants was 29.8 (with a standard deviation of 10.5). The standard error of the mean was .605 and a 95% confidence interval of 28.609 and 30.9911. Figure 17 displays the results of this test.
No significant difference between the survey and the underlying population. The 95% Confidence Interval for the difference between the two averages indicates a difference of as little of 28.609 years and as much as 30.991 years old for survey participants at Texas A&M University – Texarkana.

Of the 452 students from Dakota State University that answered this question, 48.7% were female with a standard deviation of .5. As figure 18 indicates, the 95% Confidence Interval for the difference between the two genders at Dakota State University indicates a difference of as little of 44.08% and 53.32% that students are female.

### One-Sample T – DSU (Gender)

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
<th>95% CI</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>452</td>
<td>0.4870</td>
<td>0.50</td>
<td>0.0235</td>
<td>(0.4408, 0.5332)</td>
<td>-1.51</td>
<td>0.133</td>
</tr>
</tbody>
</table>

Figure 18

Of the 300 students from Texas A&M University - Texarkana that answered this question, 83%* were female with a standard deviation of .376. As figure 19 indicates, the 95% Confidence Interval for the difference between the two genders at Texas A&M University - Texarkana indicates a difference of as little of 78.73% and 87.27% that students are female. With such a large percentage of female participants in this survey for Texas A&M University, it may not be representative of the population.
One-Sample T – TAMUT (Gender)

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>StDev</th>
<th>SE Mean</th>
<th>95% CI</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>0.8300</td>
<td>0.376</td>
<td>0.0217</td>
<td>(0.7873, 0.8727)</td>
<td>5.01</td>
<td>0.00</td>
</tr>
</tbody>
</table>

The majority of survey participants enjoy using social networking sites. Texas A&M University-Texarkana survey participants revealed a mean of .6689* and Dakota State University survey participants a mean of .6066*, with an overall mean of .6340*. The information provided in this section was coded with a -1 to represent disagreement and a +1 to represent agreement.

As the upward trend for online course offerings continues (Allen & Seaman, 2005; Allen & Seaman, 2009), data indicates students who are able to take face-to-face courses enjoy this modality. Texas A&M University-Texarkana survey participants had mean of .8261* and Dakota State University survey participants a mean of .7991*, with an overall mean of .8113* when responding to the statement ‘I enjoy face to face classes’.

Data indicates that students from TAMUT have a greater preference of online and hybrid courses that do DSU students. Utilizing a One Sample T-Test for the two schools, Texas A&M University-Texarkana survey participants had mean of .4816* and Dakota State University survey participants a mean of .2599* when responding to the statement, ‘I enjoy online classes’, and means of .3185* and .2102* respectively, when responding to the statement, ‘I enjoy hybrid classes’.

Although data indicates that Texas A&M University – Texarkana students are less likely to reject a merger between learning management systems and social networking sites, it is revealed that students at neither school would prefer to merge their social networking platforms with their online learning systems. When responding to the statement, ‘I wish I could access my
learning management system from my social networking account’, survey participants from Texas A&M University-Texarkana had mean of -.1342* and Dakota State University survey participants a mean of -.2643*, with an overall mean of -.2097*.

Students at Dakota State University do not appear to be interested in portals to social networking sites from their course management systems, while students at Texas A&M University-Texarkana have a tendency to show interest in the social portal image embedded in Desire 2 Learn. A One Sample T-Test for the two schools performed on question 13E reveals that students from Dakota State University had a mean of -.2102*, while students at Texas A&M University-Texarkana had a mean of .1340*.

A One Sample T-Test for the two schools performed on question 14B reveals that students from Dakota State University had a mean of .3348*, while students at Texas A&M University-Texarkana had a mean of .1429*. Another indicator resides in the responses of students in question 12G and 15E. Students at Texas A&M University-Texarkana, when responding to the statement in 12G, ‘I wish I could access my learning management system from my social networking account’, revealed a mean of -.1342*. Later in the survey, when presented with the graphical representation of social ELearning portal in question 15E, which stated, ‘The above image (Social E-Learning-TAMUT) enhances my online experience’, students at Texas A&M University-Texarkana had a mean of .1216*. This statistical evidence indicates that students at Texas A&M University-Texarkana seem to embrace idea of social ELearning through D2L more than students at DSU.

Table 10 displays a summary of the data presented in this section.

<table>
<thead>
<tr>
<th>Question</th>
<th>Summary</th>
<th>University</th>
<th>Result (Mean)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>12A</td>
<td>I enjoy using social networking sites.</td>
<td>TAMUT</td>
<td>.6689*</td>
<td>0.0</td>
</tr>
<tr>
<td>12A</td>
<td>I enjoy using social networking sites.</td>
<td>DSU</td>
<td>.6066*</td>
<td>0.0</td>
</tr>
<tr>
<td>12B</td>
<td>I enjoy online classes.</td>
<td>TAMUT</td>
<td>.4816*</td>
<td>0.0</td>
</tr>
<tr>
<td>12B</td>
<td>I enjoy online classes.</td>
<td>DSU</td>
<td>.2599*</td>
<td>0.0</td>
</tr>
<tr>
<td>12C</td>
<td>I enjoy hybrid classes.</td>
<td>TAMUT</td>
<td>.3185*</td>
<td>0.0</td>
</tr>
<tr>
<td>12C</td>
<td>I enjoy hybrid classes.</td>
<td>DSU</td>
<td>.2102*</td>
<td>0.0</td>
</tr>
<tr>
<td>12D</td>
<td>I enjoy face-to-face classes.</td>
<td>TAMUT</td>
<td>.8261*</td>
<td>0.0</td>
</tr>
<tr>
<td>Question</td>
<td>Summary</td>
<td>University</td>
<td>Result (Mean)</td>
<td>P-Value</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>12D</td>
<td>I enjoy face-to-face classes.</td>
<td>DSU</td>
<td>.7991*</td>
<td>0.0</td>
</tr>
<tr>
<td>12F</td>
<td>Using social networking increases my satisfaction of using a learning management system</td>
<td>TAMUT</td>
<td>-.1477*</td>
<td>0.0</td>
</tr>
<tr>
<td>12F</td>
<td>Using social networking increases my satisfaction of using a learning management system</td>
<td>DSU</td>
<td>-.1419*</td>
<td>0.0</td>
</tr>
<tr>
<td>12G</td>
<td>I wish I could access my learning management systems from my social networking account.</td>
<td>TAMUT</td>
<td>-.1342*</td>
<td>0.004</td>
</tr>
<tr>
<td>12G</td>
<td>I wish I could access my learning management systems from my social networking account.</td>
<td>DSU</td>
<td>-.2643*</td>
<td>0.0</td>
</tr>
<tr>
<td>13E</td>
<td>The above image (DSU Social ELearning) enhances my online experience.</td>
<td>TAMUT</td>
<td>.1340*</td>
<td>0.004</td>
</tr>
<tr>
<td>13E</td>
<td>The above image (DSU Social ELearning) enhances my online experience.</td>
<td>DSU</td>
<td>-.2102*</td>
<td>0.0</td>
</tr>
<tr>
<td>14A</td>
<td>The above image (Facebook Social E-Learning) is too busy.</td>
<td>TAMUT</td>
<td>-.2253*</td>
<td>0.0</td>
</tr>
<tr>
<td>14A</td>
<td>The above image (Facebook Social E-Learning) is too busy.</td>
<td>DSU</td>
<td>-.0484</td>
<td>0.229</td>
</tr>
<tr>
<td>14B</td>
<td>The above image (Facebook Social E-Learning) would distract from learning.</td>
<td>TAMUT</td>
<td>.1429*</td>
<td>0.006</td>
</tr>
<tr>
<td>14B</td>
<td>The above image (Facebook Social E-Learning) would distract from learning.</td>
<td>DSU</td>
<td>.3348*</td>
<td>0.0</td>
</tr>
<tr>
<td>Question</td>
<td>Summary</td>
<td>University</td>
<td>Result (Mean)</td>
<td>P-Value</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>14C</td>
<td>The above image (Facebook Social E-Learning) would make learning more interesting</td>
<td>TAMUT</td>
<td>.1156**</td>
<td>0.016</td>
</tr>
<tr>
<td>14C</td>
<td>The above image (Facebook Social E-Learning) would make learning more interesting</td>
<td>DSU</td>
<td>-.0815**</td>
<td>0.041</td>
</tr>
<tr>
<td>15E</td>
<td>The above image (Social E-Learning – TAMUT) enhances my online experience.</td>
<td>TAMUT</td>
<td>.1216*</td>
<td>0.008</td>
</tr>
<tr>
<td>15E</td>
<td>The above image (Social E-Learning – TAMUT) enhances my online experience.</td>
<td>DSU</td>
<td>-.2136*</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table 10

**Regression Diagnostic**

In the next section, regression analysis will be used to examine the relationships between the student response on the survey and the time spent on E-Learning and social networking. Regression diagnostics, including multicollinearity testing, are employed to help formulate the regression models. Multicollinearity can be defined in a descriptive sense to ‘indicate the degree to which the predictors are intercorrelated’ (Grimm & Yarnold, 1995). In order to test the data set for multicollinearity issues, multiple Pearson correlations were computed using Minitab. It was concluded that a high multicollinearity existed if questions 12F and 12G were present in the same correlation models, and it was decided to remove 12G from the equations which also contained 12F. Likewise, 13C/13D, 14C/14D, and 15C/15D also presented extremely high levels...
of correlation ( > .80). Therefore 13D was not used in the same model as 13C, 14D was not used with 14C and 15D was not used with 15C.

Pearson correlations were run on the data in Minitab. Correlation testing was utilized to test data for multicollinearity issues and to discover which variables would be used in the subsequent regression models; see Appendix F for results of correlations. The correlation testing did not indicate any issues with using the following survey items for social networking regression: 12F, 14A, 14B, 14C, and GPA, while the following survey items were chosen for E-Learning: 12B, 12F, 14A and GPA.

Regression Models

While controlling for other factors, multivariate regression analysis was employed to determine if relationships existed between variables. Multivariate regression analysis is a statistical technique that is used when ‘one attempts to predict a single continuous variable (often called a dependent or criterion variable) using two or more continuous or nominal variables (often called independent or predictor variables)’ (Grimm & Yarnold, 1995). The regression model equations that we identified as indicating a significant relationship between the student response variables and the time spent on E-Learning and Social networking are as follows:

1) \[ \text{CodedTimeSN} = \alpha + \beta_1 12F + \beta_2 14A + \beta_3 14B + \beta_4 14C + \beta_5 \text{CodedGPA} + \varepsilon_1 \]

2) \[ \text{CodedTimeEL} = \alpha + \beta_1 12B + \beta_2 12F + \beta_3 14A + \beta_4 \text{CodedGPA} + \varepsilon_1 \]

Student that agree with question 12F are likely to spend 2.34* more hours per week in social networking sites, implying that social networking usage increases E-Learning satisfaction, whereas, students that disagree spend 2.34 less hours per week in social networking sites. Students that agree with question 14A are likely to spend .65 *** less hours in social networking sites per week when reporting on the Facebook E-Learning image, whereas, students that disagree spend .65 more time in social networking sites. Question 14B respondents that agreed
spent .89** more hours in social networking sites per week; those that disagreed spent .89 less hours. Students that agreed with question 14C reported to spend .98* more hours per week in social networking sites, whereas, those that disagree spent .98 less hours per week using social networking sites. It is also revealed that, for every one unit increase in GPA, students spent -2.52 (less) hours per week utilizing social networking sites.

Figure 20 below shows the regression analysis of survey results of social networking usage rates versus participant responses for 12F, 14A, 14B, 14C and GPA. In addition to the individual coefficient indicating a significant relationship between the student response variables and the time spent on social networking, the F-Test in the analysis of variance section in figure 20 confirms the significance of the model at the 99% confidence level.

| Regression Analysis: CodedTimeSN versus 12F, 14A, 14B, 14C, CodedGPA |
|------------------|---------------|---------|---|---|
| The regression equation is |
| CodedTimeSN = 15.2 + 2.34 12F - 0.649 14A + 0.891 14B + 0.983 14C - 2.52 CodedGPA |
| 738 cases used, 210 cases contain missing values |
| Predictor | Coef | SE Coef | T | P |
| Constant | 15.2420 | 1.7660 | 8.63 | 0.000 |
| 12F | 2.3351 | 0.3820 | 6.11 | 0.000 |
| 14A | -0.6489 | 0.3592 | -1.81 | 0.071 |
| 14B | 0.8909 | 0.3629 | 2.45 | 0.014 |
| 14C | 0.9829 | 0.3591 | 2.74 | 0.006 |
| CodedGPA | -2.5164 | 0.5284 | -4.76 | 0.000 |
| R-Sq = 12.1% R-Sq(adj) = 11.5% |
| Analysis of Variance |
| Source | DF | SS | MS | F | P |
| Regression | 5 | 4396.51 | 879.30 | 20.18 | 0.000 |
| Residual Error | 732 | 31898.52 | 43.58 | |
| Total | 737 | 36295.02 | | |
Student that agree with question 12B are likely to spend 1.44* more hours per week in E-Learning sites, and student that disagree spend 1.44 hours less in E-Learning sites. Student that agree with question 12F are likely to spend .92** less hours per week in E-Learning sites, whereas, students that disagree spend .92 more hours per week in E-Learning sites. Students that agree with question 14A are likely to spend 1.11* more hours in E-Learning sites per week when reporting on the Facebook E-Learning image, whereas, students that disagree spend 1.11 less time in E-Learning sites. It is also revealed that, for every one unit increase in GPA, students spent 1.33** (more) hours per week utilizing E-Learning sites.

Figure 21 below shows the regression analysis of survey results of E-Learning usage rates versus participant responses for 12B, 12F, 14A, and GPA. In addition to the individual coefficient a significant relationship between the student response variables and the time spent on E-Learning, the F-Test in the analysis of variance section in figure 20 confirms the significance of the model at the 99% confidence level.

### Regression Analysis: CodedTimeEL versus 12B, 12F, 14A, CodedGPA

The regression equation is

\[
\text{CodedTimeEL} = 3.22 + 1.44 \times 12B - 0.918 \times 12F + 1.11 \times 14A + 1.33 \times \text{CodedGPA}
\]

738 cases used, 210 cases contain missing values

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Coef</th>
<th>SE Coef</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.2240</td>
<td>1.9420</td>
<td>1.66</td>
<td>0.097</td>
</tr>
<tr>
<td>12B</td>
<td>1.4400</td>
<td>0.3429</td>
<td>4.20</td>
<td>0.000</td>
</tr>
<tr>
<td>12F</td>
<td>-0.9178</td>
<td>0.4003</td>
<td>-2.29</td>
<td>0.022</td>
</tr>
<tr>
<td>14A</td>
<td>1.1112</td>
<td>0.3234</td>
<td>3.44</td>
<td>0.001</td>
</tr>
<tr>
<td>CodedGPA</td>
<td>1.3320</td>
<td>0.5832</td>
<td>2.28</td>
<td>0.023</td>
</tr>
</tbody>
</table>

R-Sq = 6.2%  R-Sq(adj) = 5.7%

### Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4</td>
<td>2592.64</td>
<td>648.16</td>
<td>12.09</td>
<td>0.000</td>
</tr>
<tr>
<td>Residual Error</td>
<td>733</td>
<td>39307.46</td>
<td>55.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>737</td>
<td>41900.10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 21
Hypothesis Testing

Hypothesis #1: Students who spend more time in their course content management system have higher GPAs.

Based on the data collected and analyzed in this study, the first hypothesis is accepted: students, who spent more time in the E-Learning system, have higher GPAs. A positive correlation exists between the two variables, \( r = 0.105^* \). Figure 22 shows a scatterplot of time spent in E-Learning sites (y-axis) when compared to the students GPA (x-axis). The positive slope presented in the scatterplot shows that, as time spent increases, GPA also increase.

![Scatterplot of CodedTimeEL vs CodedGPA](image-url)
Hypothesis #2: Students who spend more time on social networking sites have lower GPAs.

Based on the data collected and analyzed in this study, the second hypothesis is accepted: students, who spent more time on social networking sites, have lower GPAs. A negative correlation exists between the two variables, \( r = -0.181^* \). Figure 23 shows a scatterplot of time spent in social network sites (y-axis) when compared to the students GPA (x-axis). The negative slope presented in the scatterplot shows that, as time spent in social networking sites increase, GPA decreases.
Hypothesis #3: Students who use social networking sites spend less time in their course content management system than students who do not use social networking sites.

Based on the data collected and analyzed in this study, the third hypothesis is rejected: students who use social networking sites spend more time in their course content management system than students who do not use social networking site. A positive correlation exists between the two variables, $r = 0.060^{***}$. Figure 24 shows a scatterplot of time spent in social networking sites (y-axis) when compared to the time spent in E-Learning sites (x-axis). The positive slope presented in the scatterplot shows that, as social networking time usages increases, so does time spent in E-Learning systems.
**Hypothesis #4:** Students who use social networking sites derive greater satisfaction from their course content management system than students who do not use social networking sites.

Based on the data collected and analyzed in this study, the fourth hypothesis is accepted: students who use social networking sites derive greater satisfaction from their course content management system than students who do not use social networking sites. A positive correlation exists between the two variables, $r = 0.280^*$. Figure 25 shows a scatterplot of time spent in social networking sites (y-axis) when compared to reported data of the statement in 12F: “Using social networking increases my satisfaction of using E-Learning systems (x-axis). The positive slope presented in the scatterplot shows that, as social networking time usages increases, satisfaction in using E-Learning systems also increases.

![Scatterplot of CodedTimeSN vs 12F](image-url)
Chapter Summary

Chapter 4 has discussed the demographic information revealed through this study as well as the results of the statistical tests that were conducted on the data. Also, this chapter revealed the results of the hypothesis testing as shown in Table 11. Chapter 5 will report on the conclusions of the findings involved in this study and will highlight future research in this subject area.

Summary Table for Conclusions of Hypothesis Testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Accepted/Rejected</th>
<th>r -Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesis #1:</strong> Students who spend more time in their course content management system have higher GPAs.</td>
<td>Accepted</td>
<td>0.105*</td>
</tr>
<tr>
<td><strong>Hypothesis #2:</strong> Students who spend more time on social networking sites have lower GPAs.</td>
<td>Accepted</td>
<td>-0.181*</td>
</tr>
<tr>
<td><strong>Hypothesis #3:</strong> Students who use social networking sites spend less time in their course content management system than students who do not use social networking sites.</td>
<td>Rejected</td>
<td>0.060***</td>
</tr>
<tr>
<td><strong>Hypothesis #4:</strong> Students who use social networking sites derive greater satisfaction from their course content management system than students who do not use social networking sites.</td>
<td>Accepted</td>
<td>0.280*</td>
</tr>
</tbody>
</table>
Chapter 5: Conclusions, Discussion and Future Research

Allen & Seaman (2005, 2009) revealed that more than 4.6 million students took at least one online course in the fall semester of 2008; representing a 287% increase over those taking online courses in the fall semester of 2002. This rise in online education, paralleled with increasing attrition rates, prompted this researcher to explore social aspects to E-Learning, thereby filling a gap in the literature and prompting a need for future research in this area of study.

Chapter 5 provides a summary of the study, conclusions derived from the statistical analysis results of the study, and contributions to the body of knowledge surrounding this topic. Additionally, this chapter will discuss future research recommendations for those that may wish to further research this area of study.

Summary of the Study

The goal of this study was to investigate student use of online, social networks (Facebook, LinkedIn, etc.), E-Learning course content management systems (Blackboard and Desire 2 Learn) at Texas A&M University-Texarkana and Dakota State University, and to determine the extent of student participation in each system and the relationship, if any, between these systems. This study was successful in its design and analysis in regard to the following:

1) Determining if greater E-Learning satisfaction is derived through increased use of online social networking sites;

2) Determining, through self-reporting, how much time students with tablet PCs (mobile computers) at Dakota State University and Texas A&M University-Texarkana use social networking; and

3) Collecting and analyzing data regarding user’s opinion of portals between E-Learning systems and social networks, and vice-versa.
Significant Findings

This research project has revealed significant findings. It was shown in this research that satisfaction of E-Learning systems increases as online, social networking usage increases. As explained in Chapter 2 of this research, Hart (2012) discussed social connectedness as a necessary component in a student’s success in online learning, while Leong (2011) suggested that social presence strongly affects cognitive absorption which in turn positively affects satisfaction. Social presence and connectedness promotes persistence and can ultimate affect the online learners overall success.

Students that agree with question 12F (presented in Table 10) are likely to spend 2.34* more hours per week utilizing social networking sites, whereas, students that disagree spend 2.34 less hours per week in social networking sites. This implies that social networking usage increases E-Learning satisfaction. The increase in satisfaction of E-Learning systems correlated with the increase in online, social networking usage discovery suggests that the addition of an online, social component to E-Learning systems should be explored.

Another significant finding revealed through this research project involves the increase and decrease of GPA when compared with E-Learning and online, social networking usage. The research indicates that, for every one unit increase in GPA, students spent 1.33** (more) hours per week utilizing E-Learning sites. GPA suffered a negative effect when compared to online, social networking usage. The data indicates that, for every one unit increase in GPA, students spent 2.52 (less) hours per week utilizing social networking sites. This finding is significant in understanding how online activity can affect a student’s GPA.

Another discovery in this research was revealed through the comparison of questions 12G, ‘I wish I could access my learning management systems from my social networking account’ and questions 13E, 14E, and 15E. Students from Texas A&M University – Texarkana had a mean of -.1342*, students from Dakota State University had a mean of -.2643* and an overall mean of -.2097*. While data indicates that Texas A&M University – Texarkana students are less likely to reject a merger between learning management systems and social networking sites, it appears that students at neither school wish to merge their social networking platforms
with their online learning systems. When the portals between E-Learning sites and social networking were visually represented however, the data suggests that students at Texas A&M University – Texarkana were actually very receptive to the mergers. Students a Texas A&M University – Texarkana reported a mean of .1340* for question 13E, .2226* for 14E, and .1216* for 15E. Table 12 provides summary data for these four questions:

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>12G. I wish I could access my learning management systems from my social networking account.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAMUT</td>
<td>-.1342</td>
<td>0.004</td>
</tr>
<tr>
<td>DSU</td>
<td>-.2643</td>
<td>0</td>
</tr>
<tr>
<td>Overall</td>
<td>-.2097</td>
<td>0</td>
</tr>
<tr>
<td>13E. The above image (DSU Social ELearning) enhances my online experience.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAMUT</td>
<td>.1340</td>
<td>.004</td>
</tr>
<tr>
<td>DSU</td>
<td>-.2102</td>
<td>0</td>
</tr>
<tr>
<td>Overall</td>
<td>-.0729</td>
<td>.014</td>
</tr>
<tr>
<td>14E. The above image (Facebook Social E-Learning) enhances my online experience.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAMUT</td>
<td>.2226</td>
<td>0</td>
</tr>
<tr>
<td>DSU</td>
<td>.0154</td>
<td>0.702</td>
</tr>
<tr>
<td>Overall</td>
<td>.0964</td>
<td>.002</td>
</tr>
<tr>
<td>15E. The above image (Social E-Learning - TAMUT) enhances my online experience.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAMUT</td>
<td>.1216</td>
<td>0.008</td>
</tr>
<tr>
<td>DSU</td>
<td>-.2136</td>
<td>0</td>
</tr>
<tr>
<td>Overall</td>
<td>-.0751</td>
<td>.011</td>
</tr>
</tbody>
</table>

Table 12
Conclusions

This study addresses the research vacancy surrounding the topic of how time and satisfaction levels are affected through dual usage of online social networking and E-Learning. Information regarding the usage of E-Learning systems, studies of social networking usage, descriptions of satisfaction levels of those utilizing E-Learning and those utilizing online social networking websites is available. However there was no analysis found regarding the relationship between these systems in terms of the effect on user satisfaction. This research was designed to investigate student use of online social networks (Facebook, LinkedIn, etc.) and E-Learning course content management systems (Blackboard and Desire 2 Learn) and to determine the extent of student participation in each system, satisfaction levels through usage of systems, and the relationship, if any, between these systems.

The data collected in this study was analyzed to answer several research questions in order to test the four hypothesis statements.

The research questions were as follows:

1. What is the frequency of student participation in social networking during class time?
2. How often do students access social networking sites?
3. How often do students access E-Learning environment?
4. What are the current satisfaction levels of students in their E-Learning environment?
5. What are the current E-Learning environment satisfaction levels of students who use social networking?
6. What are the current E-Learning environment satisfaction levels of students who do not use social networking?
7. What is student’s acceptance of social E-Learning environments (portals between social networking and E-Learning Systems)?
This study was developed to test four hypotheses. Analysis of the data collected in this study determined that the first hypothesis is accepted: students, who spent more time in the E-Learning system, have higher GPAs. The research also led to the acceptance of the second hypothesis: students, who spent more time on social networking sites, have lower GPAs. The third hypothesis, regarding students who use social networking sites spending less time in their course content management system than students who do not use social networking sites, was rejected. The opposite of this was found to be true; as time in social networking increases, time spent in E-Learning systems also increases. In regard to the last hypothesis, it was discovered that students who use social networking sites do indeed derive greater satisfaction from their course content management system than students who do not use social networking sites.

Future Research Recommendations

Whereas this completed research project included a large sample of the populations across two universities, it is acknowledged by the researcher that the results presented may not be representative of other universities. This research should be replicated at other universities in order to determine greater generalizability to other student populations.

Attrition in online courses has been discussed in great detail in this study, with satisfaction being a primary factor in attrition rates. Hart (2012) discusses social connectedness as a necessary component in a student’s success in online learning. Therefore, another potential research avenue would involve a study analyzing to what extent learning communities facilitate learning and whether satisfaction with online courses increases and attrition rates are affected through these learning communities.

Another future research project resides in the variation of student responses between Dakota State University and Texas A&M University-Texarkana when responding to survey items 13E, 14E, and 15E. Students at Texas A&M University-Texarkana reported a mean of .1340* for question 13E, .2226* for 14E, and .1216* for 15E while students at Dakota State University disagreed with merging social networking with E-Learning sites. Understanding the variation between the universities for these survey responses could determine whether geographic factors influence these desires.
A variation of this study would be the addition of the demographic variable ‘college major’ into a repeated study. This variable would allow the researcher to delineate the data by major, indicating the extent to which students with differing majors derive satisfaction resulting from the dual usage of online social networking systems and E-Learning systems.

Reflections

This research was an introductory investigation relating to the level of satisfaction students experience through the dual usage of online social networking systems and E-Learning systems of students at Texas A&M University-Texarkana and Dakota State University. Much more research is necessary in order to understand the benefits of a social, E-Learning environment among students seeking higher education at colleges and universities.
References


Blackboard (2010).


(http://www.sciencedirect.com/science/article/pii/S1096751601000690)


http://ijahsp.nova.edu/articles/vol3num2/johnson.pdf


Won Kim and Ok-Ran Jeong. 2009. On Social e-Learning. In *Proceedings of the 8th International Conference on Advances in Web Based Learning* (ICWL '09), Marc Spaniol, Qing Li, Ralf Klamma, and Rynson W. Lau (Eds.). Springer-Verlag, Berlin, Heidelberg, 12-24. DOI=10.1007/978-3-642-03426-8_2 [http://dx.doi.org/10.1007/978-3-642-03426-8_2](http://dx.doi.org/10.1007/978-3-642-03426-8_2)

Appendix

Appendix A: Screen Shots of Social E-Learning

Figure A(1) – Facebook E-Learning

Figure A (2) – D2L – My Social

Figure A (3) – Blackboard – My Social
Appendix B: IRB Approval at DSU

DSU Institutional Review Board

Expeditied Project Approval

To: Kevin Williams

Date: July 20, 2011

Project Title: Social Networking and ELearning: Determining Time and Satisfaction Derived through Dual Use

Approval #: 13

The IRB approved your project using expedited procedures as described in 45 CFR 46.110. The activity was deemed to be no greater than minimal risk, and the following expedited category (categories) from 63 FR 60364-60367 was (were) found to be applicable to your activity:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

One-year approval of your project will be dated starting July 20, 2011. If you require additional time to complete your project or wish to extend the activity, please submit a request for extension before June 1, 2012. The request can be submitted by email to IRB@dsu.edu. If there are any unanticipated problems involving risks to subjects or others, or changes in the procedures during the study, please contact Mickie Kreidler, (Mickie.kreidler@dsu.edu). Any protocol changes must be approved by the IRB prior to implementation. At the end of the project please inform the committee that your project is complete.

If I can be of further assistance, don’t hesitate to let me know.

Sincerely,

John H. White
Jack Walters

Chair, DSU Institutional Review Board
Appendix C: IRB Approval at TAMUT

August 23, 2011

Kevin Williams,

As per our conversation thank you for submitting to the A & M Texarkana IRB for review/review the documentation of IRB approval of your project Social Networking and E-Learning: Determining Time and Satisfaction Derived through Dual Use. Your letter of approval from the Dakota State University IRB for the time-spanning July 20, 2011 through July 20, 2012 has been placed on file with TAMU-T IRB and is sufficient to begin your research activities at this institution. Should your project change and require extension it will be necessary to contact the IRB to determine any action necessary to maintain your approved status. Good luck with your project. If you have any questions do not hesitate to contact me.

Tommy Hughes, Ph.D.
IRB Chair, TAMU-T
1. Do you use a mobile computer/tablet PC?

☐ Yes
☐ No

Informed Consent

Research Statement

The purpose of this study is to develop a deeper understanding of how students use online social networks (Facebook and MySpace) and E-Learning course content management systems (Blackboard and Desire 2 Learn). Objectively, this study will: 1) determine if greater E-Learning satisfaction is derived through increased use of online social networking sites; 2) determine, through self-reporting, how much time students with tablet PCs at Dakota State University use social networking during face-to-face class time; and 3) test user’s opinion of portals between E-Learning systems and social networks, and vice-versa. There are no known risks to participants nor are there any direct benefits.

Confidentiality

All documents and information pertaining to this research study will be kept confidential in accordance with all applicable federal, state, and local laws and regulations. Your responses are strictly confidential. When the data and analysis are presented, you will not be linked to the data by your name, title or any other identifying item. You understand that the results of this study may be published. If any data is published, you will not be identified by name. This survey is anonymous.

Voluntary Participation

The survey will take approximately 10 minutes to complete. You understand that your participation is voluntary and can be discontinued at any time by closing your web browser or selecting “Exit” noted in the upper right hand corner of each screen. You understand that your participation in this study is entirely voluntary, and that refusal to participate will involve no penalty or loss of benefits to me. You may discontinue participation at any time without penalty or loss of benefits.

Security

This study utilizes SSL, which is short for Secure Sockets Layer. This is a protocol initially developed for transmitting private documents or information via the Internet. It essentially works through a cryptographic system that secures a connection between a client and a server. Many websites use this protocol to obtain confidential user information and it is supported in all modern browsers.

Comments: Clicking on “Next” below: You understand the purpose and scope of your participation in this study. You indicate that you willingly agree to participate in this online survey, which will be utilized as data for dissertation requirements and/or publication. Your opinions may be utilized for research purposes and your ideas may be attributed to you anonymously. In other words, you will not be identified by name, title or any other identifying means in this study. If you have any questions about your rights as a research subject, you may contact the Dakota State University Institutional Review Board Coordinator, Dr. Mickie Kredlier at (605) 256-5100, mickie.kredlier@dsu.edu. For questions about this survey, you can email Kevin Williams at kmwilliams@pielo.dsu.edu.
### 2. Page 2 - Survey Begins

1. **What university do you attend?**  

2. **What is your current level of education?**  

3. **What is your GPA?**  
   - [ ] 4.0 - 3.5  
   - [ ] 3.0 - 3.49  
   - [ ] 2.5 - 2.99  
   - [ ] 2.0 - 2.49  
   - [ ] 1.5 - 1.99  
   - [ ] Below 1.5

4. **What is your Ethnicity?**  
   - [ ] Native American  
   - [ ] Asian or Pacific Islander  
   - [ ] Hispanic  
   - [ ] African American  
   - [ ] Caucasian  
   - [ ] Other

5. **Sex:**  
   - [ ] Male  
   - [ ] Female

6. **Age:**  
   - [ ] Under 18  
   - [ ] 18-22  
   - [ ] 23-29  
   - [ ] 30-39  
   - [ ] 40-49  
   - [ ] 50+
7. What social networking site to you spend the greatest amount of time in?

- [ ] Facebook
- [ ] MySpace
- [ ] Vooeb
- [ ] Twitter
- [ ] LinkedIn
- [ ] Ning
- [ ] Tagged
- [ ] Sebo
- [ ] mylife
- [ ] Friendster
- [ ] MiGente

Other (please specify) __________

8. How much time do you spend on social networking per week?

- [ ] 0 hours
- [ ] 1-5 hours
- [ ] 5-10 hours
- [ ] 10-15 hours
- [ ] 16-20 hours
- [ ] 20-25 hours
- [ ] 25-30 hours
- [ ] 31+ hours
9. How much time do you spend on E-Learning per week?

- 0 hours
- 1-5 hours
- 5-10 hours
- 10-15 hours
- 15-20 hours
- 20-25 hours
- 25-30 hours
- 31+ hours

10. I am currently enrolled in a:
(Texas A&M University - Texarkana uses Blackboard and Dakota State University uses Desire 2 Learn (D2L) as the learning management system)

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face to face course that uses a learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>management system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hybrid course that uses a learning management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totally online course that uses a learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>management system</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Social networking site examples:
Facebook, MySpace, Xanga, Mi Gente, Ren Ren, Vkontakte, Vooba.

11. Mark the one that describes your situation the best.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Very Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use social networking sites at home.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use social networking sites at work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use social networking sites at school.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use social networking sites when I should be studying.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use social networking sites when I should be working.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use social networking sites while listening to face to face class lectures.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use social networking sites while listening to online class lectures.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. Mark the one that describes your situation the best.
(Texas A&M University - Texarkana uses Blackboard and Dakota State University uses Desire 2 Learn (D2L) as the learning management system)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoy using social networking sites.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy online classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy hybrid classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy face to face classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use social networking more than I use Desire 2 Learn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using social networking increases my satisfaction of using learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>management systems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I wish I could access my learning management system from my social</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>networking account.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The satisfaction I gain from my learning management system would increase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>if I could access it from my social networking site.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Welcome Box

Welcome,
Kevin Williams

Options
Preferences
Change Password
Homepage
Profile
Locker

News

Scheduled Maintenance/Upgrade

Desire2Learn will be unavailable every 4th Sunday of the month for scheduled maintenance. Also, at 3am CST each day for a short period due to re-indexing of files.

My Courses

Course

- SandBox
- DSU Computer Science
  - DSU MSIS Final Exams - DSU MSIS EXAMS

My Social

Facebook

Twitter
13. Look at the image above. You will see a Desire 2 Learn screen shot with Facebook, Twitter, and MySpace images overlaid. Answer the following to the best of your ability.

The above image (Social E-Learning - DSU)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>too busy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would detract from learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would make learning more interesting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would make learning more fun</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>enhances my online experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Facebook - Social E-Learning
14. Look at the image above. You will see a Facebook screen shot with 'My Class' to the right. The image displays a connection from Facebook to university courses. Answer the following to the best of your ability.

**The above image (Facebook - Social E-Learning)**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>is too busy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would distract from</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>learning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would make learning more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>interesting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>would make learning more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fun.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>enhances my online experience.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
15. Look at the image above. You will see a Blackboard screen shot with Facebook, Twitter, and MySpace images overlaid. Answer the following to the best of your ability.

The above image (Social E-Learning - TAMUT)

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is too busy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would distract from</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>learning</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Would make learning</td>
<td></td>
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<tr>
<td>more engaging</td>
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<td></td>
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<tr>
<td>Would make learning</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>more fun</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Enhances my online</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>experience</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
16. Look at the image above. You will see a Vooba screen shot. Vooba is a social E-Learning environment (a combination of social networking and E-Learning). Answer the following to the best of your ability.

The above image (Social E-Learning - vooba.net)

<table>
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<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
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<td>Is too busy.</td>
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<td>would distract from learning.</td>
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<tr>
<td>would make learning more interesting.</td>
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<td>would make learning more fun.</td>
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<td>enhances my online experience.</td>
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Appendix E: Informed Consent Form

Informed Consent

Research Statement
The purpose of this study is to develop a deeper understanding of how students use online social networks (Facebook and MySpace) and E-Learning course content management systems (Blackboard and Desire 2 Learn). Objectively, this study will 1) determine if greater E-Learning satisfaction is derived through increased use of online social networking sites; 2) determine, through self-reporting, how much time students with tablet PCs at Dakota State University use social networking during face-to-face class time; and 3) test user’s opinion of portals between E-Learning systems and social networks, and vice-versa. There are no known risks to participants nor are there any direct benefits.

Confidentiality
All documents and information pertaining to this research study will be kept confidential in accordance with all applicable federal, state, and local laws and regulations. Your responses are strictly confidential. When the data and analysis are presented, you will not be linked to the data by your name, title or any other identifying item. you understand that the results of this study may be published. This survey is anonymous.

Voluntary Participation
The survey will take approximately 10 minutes to complete. You understand that your participation is voluntary and can be discontinued at any time by closing my web browser or selecting “Exit” noted in the upper right hand corner of each screen and that refusal to participate will involve no penalty or loss of benefits to you.

Security
This study utilizes SSL, which is short for Secure Sockets Layer. This is a protocol initially developed for transmitting private documents or information via the Internet. It essentially works through a cryptographic system that secures a connection between a client and a server. Many websites use this protocol to obtain confidential user information and it is supported in all modern browsers.

Consent: Clicking on “Next”
By clicking on “Next” below: You understand the purpose and scope of your participation in this study. You indicate that you willingly agree to participate in this online survey, which will be utilized as data for dissertation requirements and/or publication. Your opinions may be utilized for research purposes and your ideas may be attributed to you anonymously. If you have any questions about your rights as a research subject, you may contact the Dakota State University Institutional Review Board Coordinator, Dr. Mickie Kreidler at (605) 256-5100, mickie.kreidler@dsu.edu. For questions about this survey, you can email Kevin Williams at krwilliams@pluto.dsu.edu.
Appendix F: Correlations

**Correlations: 12B, 12F, 14A, CodedGPA**

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Cell Contents: Pearson correlation
P-Value

**Correlations: 12F, 14A, 14B, 14C, CodedGPA**

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**Correlation 15A, 15B, 15C, 15D, 15E:**

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Cell Contents: Pearson correlation  
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**Correlation 11D, 11E, 11F, 11G:**

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