

A QUALITATIVE EXAMINATION OF THE HISTORY OF E-EXTENSION (eXtension),
IMPLEMENTATION OF MOODLE™ (A COURSE MANAGEMENT SYSTEM)
AND ASSOCIATED STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

A Thesis

by

TAYLA ELISE HIGHTOWER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2010

Major Subject: Agricultural Leadership, Education, and Communications

A QUALITATIVE EXAMINATION OF THE HISTORY OF E-EXTENSION (eXtension),
IMPLEMENTATION OF MOODLE™ (A COURSE MANAGEMENT SYSTEM)
AND ASSOCIATED STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

A Thesis

by

TAYLA ELISE HIGHTOWER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Approved by:

Chair of Committee,
Committee Members,

Head of Department,

Theresa Pesi Murphrey
Kim E. Dooley
Floron C. Faries, Jr.
John F. Elliot

May 2010

Major Subject: Agricultural Leadership, Education, and Communications

ABSTRACT

A Qualitative Examination of the History of E-Extension (eXtension),
Implementation of Moodle™ (A Course Management System)
and Associated Strengths, Weaknesses, Opportunities and Threats. (May 2010)

Tayla Elise Hightower, B.S., Texas A&M University

Chair of Advisory Committee: Dr. Theresa Pesl Murphrey

According to research by Tennessen, PonTell, Romine and Motheral (1997), the Extension System has been educating the nation for over 96 years, and the idea of using technology as a medium for education has been in the minds of Extension educators for over 40 years. The National E-Extension (eXtension) Initiative is being adopted at a rapid pace, and the history of this impact requires documentation in order to assist others in similar adoption and diffusion processes. The purpose of this historical study was to describe how and why eXtension was established and the implementation of Moodle™ as a Course Management System (CMS) within eXtension. The researcher was able to determine that the eXtension system is becoming an accepted form of education for Extension. However, barriers to adoption do exist. The study revealed that online education is becoming part of Extension through eXtension, but as awareness grows and develops the eXtension system must do the same.

Technology is offering new ways to reach clientele, and as such, Extension continues to strive to take advantage of these technologies. This study consisted of two parts. The first part sought to document the history of eXtension and the implementation of Moodle™ as a

Course Management System (CMS) in Extension. The second part sought to identify the strengths, weaknesses, opportunities and threats (SWOT) related to the use of Moodle™ as a Course Management System within eXtension. Interviews were conducted with five individuals knowledgeable of the history of eXtension and the implementation of Moodle™ concerning their experience. For the second part, interviews were conducted with nine individuals currently serving as instructors within one or both eXtension Moodle™ websites. The researcher was able to document the history of eXtension and Moodle™ and determine 11 emerging themes within the predetermined areas of strengths, weaknesses, opportunities and threats. Findings revealed that those involved in using Moodle™ within Extension have knowledge of the innovation, have formed an attitude toward the innovation, and have decided to adopt or reject the innovation based on the stages of Rogers' innovation-decision process. Completion of the implementation of the innovation and confirmation of the decision stage of the process will be most effectively completed through the work of eXtension at the national level.

DEDICATION

This research is dedicated to the individuals who played an integral role in the development and implementation of online education into the Cooperative Extension System.

ACKNOWLEDGEMENTS

The gathering and writing of this research has been an interesting journey for me, and on this journey, I could not have made it without the love and support of my family, friends, colleagues and advisors.

First of all, I would like to thank my parents, Charlie and Janna Hightower. Growing up as their daughter, it was always expected that I obtain an education. The pursuit of my Master's degree has made them proud beyond belief. Their continual loving words of encouragement have made that pride known. I would also like to thank my brother, Trent Hightower. He has inspired me to do my best in school and continue my education.

I would like to thank my best friend and boyfriend, Ryan Craig. Of all people, he tends to get the brunt of any stress I may have. But because of his gentle way and his ever-steady listening ear, I have been able to make it through this journey. Our past four years have been wonderful, and I look forward to many more.

I would also like to thank my roommate, Heather Buckalew. She has been a great support and wonderful friend throughout our undergraduate years together as well as our Master's program.

Next, I would like to thank my colleagues, Susanna Coppernoll and Jennifer Jahedkar. This study would not have been possible without their support. Susanna has been a wonderful help and support system for me during the writing and organization of this thesis. Without her, this journey might not have been as smooth. Jennifer's constant understanding and support has been wonderful during the writing of this thesis.

Finally, I would like to thank my committee chair, Dr. Theresa Murphrey, for her constant support and feedback throughout this process. I would also like to express my gratitude for my committee members, Dr. Kim Dooley and Dr. Floron “Buddy” Faries. Each of you has played an integral role in my life and education. Thank you for your valuable input and support.

ACRONYMS AND OPERATIONAL DEFINITIONS

Acronyms

ADEC	American Distance Education Consortium
ASRED	Association of Southern Region Extension Directors
CMS	Course Management System
ECOP	Extension Committee on Organization and Policy
LMS	Learning Management System
NEDA	National Extension Directors and Administrators Association
SWOT	Strengths, Weaknesses, Opportunities and Threats
TEEX	Texas Engineering Extension Service
VLE	Virtual Learning Environment

Operational Definitions

CMS CMS stands for Course Management System, "...a software system that is specifically designed and marketed for faculty and students to use in teaching and learning" (Morgan, 2003, p. 2).

eLearning, Distance Education, Online Learning, Online Education

Terms used interchangeably in reference to the use of the Internet as an educational delivery tool through the use of Course Management Systems.

eXtension eXtension is an organization that exists online with no physical presence. It is operated by a Director, Associate Directors and several staff members. Some funding is provided via federal budget, "...with most...coming from state

Cooperative Extension Services via the Association of Public and Land-Grant Universities” (L. Lippke, Personal Communication, June 1, 2009).

Extension, Cooperative Extension

“Extension was designed as a partnership of the land-grant universities and the U.S. Department of Agriculture (USDA)...the provisions of the law were broad enough that states were able to bring their counties into the system as a third legal partner” (Rasmussen, 1989, p. 4). Cooperative Extension was made possible by the Smith-Lever Act signed into action on May 8, 1914 by President Woodrow Wilson (Rasmussen, 1989, p. 3).

Extension Purist

Individuals committed to the true meaning and purpose behind the Cooperative Extension System. Someone who is not committed to their job for financial gains, but for the emotional and mental gains of helping others.

Leadership As defined by Northouse (2007), “Leadership is a process whereby an individual influences a group of individuals to achieve a common goal.” It, “involves influence...occurs in groups... [and] includes attention to goals” (p. 3).

LMS LMS stands for Learning Management System. These are systems designed for the storage and deliver of educational materials.

Moodle™ Moodle™ is an open source Course Management System developed by Martin Dougiamas. It is an acronym that stands for Modular Object-Oriented Dynamic Learning Environment. It was also the second and current database offered by eXtension for the sharing of information across state lines.

SWOT “...the organization’s internal *strengths* and *weaknesses* and those significant factors outside the organization that may positively or negatively impact its future, the external *opportunities* and *threats*” (Goodstein, Nolan, & Pfeiffer, 1993, p. 226).

TABLE OF CONTENTS

	Page
ABSTRACT	iii
DEDICATION	v
ACKNOWLEDGEMENTS	vi
ACRONYMS AND OPERATIONAL DEFINITIONS	viii
TABLE OF CONTENTS	xi
LIST OF FIGURES	xiii
LIST OF TABLES	xiv
INTRODUCTION	1
Statement of the Problem	1
Conceptual Framework	2
Purpose of the Study and Research Questions	3
Methods	4
A QUALITATIVE ANALYSIS OF THE HISTORY OF E-EXTENSION (eXtension) AND THE IMPLEMENTATION OF MOODLE™ (A COURSE MANAGEMENT SYSTEM)	8
Introduction and Theoretical Framework.....	8
Purpose and Research Objectives.....	12
Methods and Procedures	13
Findings.....	16
Conclusions, Implications and Recommendations.....	22
AN EXAMINATION OF THE STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS ASSOCIATED WITH THE ADOPTION OF MOODLE™ BY E-EXTENSION (eXtension).....	26
Introduction and Conceptual Framework.....	26
Theoretical Framework.....	28
Purpose and Research Objective.....	28
Methods and Procedures.....	28
Findings.....	31
Strengths.....	31
Weaknesses.....	35
Opportunities.....	37
Threats.....	40

	Page
Conclusions, Implications and Recommendations.....	43
SUMMARY AND CONCLUSIONS.....	47
Conclusions and Implications.....	47
Recommendations.....	51
REFERENCES.....	53
APPENDIX A.....	57
APPENDIX B.....	58
VITA.....	59

LIST OF FIGURES

FIGURE		Page
1	Timeline of Events Leading to the Implementation of Moodle™ in eXtension.....	17
2	Diagram Depicting the Overlap of Themes Shared by Sample Groups Interviewed Regarding eXtension and the Strengths, Weaknesses, Opportunities and Threats Associated with Moodle™.....	50

LIST OF TABLES

TABLE		Page
1	Respondents' Comments Regarding the Strengths of Moodle™ Use for eXtension	32
2	Respondents' Comments Regarding the Weaknesses of Moodle™ Use for eXtension	35
3	Respondents' Comments Regarding the Opportunities of Moodle™ Use for eXtension.....	38
4	Respondents' Comments Regarding the Threats of Moodle™ Use for eXtension	41

INTRODUCTION

Statement of the Problem

The Smith-Lever Act was signed into action by President Woodrow Wilson in 1914 (Rasmussen, 1989). He stated it to be, “one of the most significant and far reaching measures for the education of adults ever adopted by government” (Wilson as quoted in Rasmussen, 1989, p. 2). Today, “...like state and county governments, state and county Extension Services vary in organization but share a common goal” (Rasmussen, 1989, p. 4). That common goal according to Van Den Ban and Hawkins (1988) is, “Extension education deals with strategic questions...It collects and integrates, where possible, existing knowledge about this process from other scientific disciplines and adds to knowledge through Extension research” (p. 37). The goal is far reaching not only impacting the United States but countries worldwide where Extension has been implemented by, “...discuss[ing] their growing social significance as means for helping rural people to lead better and more productive lives, particularly through the utilization of research results” (Van Den Ban & Hawkins, 1988, p. 2).

Cooperative Extension has been educating people for over 96 years, and throughout that time, different approaches to education have been addressed in order to make learning available to more people (Rasmussen, 1989). In an article by Medved in one of the first *Journal of Extension* issues (1966), the topic of distance education was addressed. Medved (1966) stated,

This thesis follows the style of *The Journal of Extension*.

“Television’s rapid development since 1948 has stimulated wide-spread interest in the use of this medium as a teaching tool” (p. 28). Medved also addressed the fact that the potential of using television as a learning tool through Extension had not fully been realized. Today, the concept of distance learning has continued to evolve as technology advances. This continuous advancement of technology required study in order to properly understand and take advantage of the opportunities presented by the emerging technologies. Rogers (2003), defined diffusion as “the process in which an innovation is communicated through certain channels over time among members of a social system” (p. 5). It was critical that the process of the diffusion of distance education technologies be studied so that understanding of the process could bring about awareness of new ways to facilitate adoption.

Conceptual Framework

Understanding the history of eXtension (2007) and the implementation of Moodle™ (2009) as a Course Management System in the context of diffusion allowed those interested in distance education to better understand and share the process involved. The innovation-decision process, “...involves time in the sense that the five steps usually occur in a time-ordered sequence of (1) knowledge, (2) persuasion, (3) decision, (4) implementation and (5) confirmation” (Rogers, 2003, p. 21). This time period, “...required to pass through the innovation-decision process” is called the innovation-decision period (Rogers, 2003, p. 21).

A detailed understanding of the strengths, weaknesses, opportunities and threats (SWOT), “...is a concerted effort to identify ‘what is’ – where the organization is today” (Goodstein, Nolan, & Pfeiffer, 1993, p. 226). This audit is an intense look at, “...the organization’s internal *strengths* and *weaknesses* and those significant factors outside the organization that may positively or negatively impact its future, the external *opportunities*

and *threats*” (Goodstein, Nolan, & Pfeiffer, 1993, p. 226). The SWOT analysis helped determine which factors are currently in place and which factors need to be put into action to encourage further implementation of Moodle™ as the Course Management System of choice.

Purpose of the Study and Research Questions

The purpose of this study was to document the history of eXtension, the diffusion of Moodle™ across eXtension and identify the strengths, weaknesses, opportunities and threats associated with the use of Moodle™ as an educational tool in eXtension. The following objectives were achieved in order to complete the study:

1. Describe the history of eXtension and the implementation of Moodle™ as a Course Management System.
2. Identify the strengths, weaknesses, opportunities and threats associated with the use of Moodle™ as an educational tool in eXtension from the perspective of the purposive sample.

This study consisted of two constructs that identified the elements that determine the implementation of a distance education tool by organizational leaders in Extension and factors that foster adoption of a distance education tool by Extension educators.

Methods

The methodology for this study was a qualitative study consisting of personal interviews, both in person and via the telephone. Personal interviews were conducted with individuals knowledgeable of the development of eXtension and the implementation of Moodle™ in order to understand and describe the history of eXtension and implementation of Moodle™. Personal interviews were also conducted with active Moodle™ course instructors in an effort to identify the strengths, weaknesses, opportunities and threats associated with the use of Moodle™ as an educational tool in eXtension. Face-to-face interviews were conducted with individuals when possible. The researcher also used telephone interviews due to the fact that several of the respondents were located across the United States, thus face-to-face interviews were not practical in all cases.

Two purposive samples were identified in order to achieve the objectives of the study. The first purposive sample consisted of individuals knowledgeable of the history of eXtension and the adoption of Moodle™ throughout eXtension. Individuals were selected for participation based on their level of familiarity with early Moodle™ use in eXtension. Individuals were recruited for participation until data saturation was achieved. A total of five individuals were interviewed. Three of those interviews were face-to-face, while the other two were conducted via the telephone to accommodate the respondent's schedules. The second purposive sample consisted of 'very active' and 'active' course instructors utilizing Moodle™ websites in order to gain the richest information. 'Very active' was defined as individuals who had accessed a Moodle™ course recently and at least ten or more times between January and July of 2009. 'Active' was defined as individuals who had logged in recently and at least three or more times between January and July of 2009. Activity levels were determined from individual activity reports. This sample consisted of nine individuals.

Two individuals were interviewed face-to-face and the remaining seven were interviewed via telephone due to distance and schedule preferences. According to Cresswell (2008), homogeneous sampling is a purposive sample based upon membership in a subgroup with defining characteristics. The defining characteristics of the sample for this study were determined by utilizing data readily available to the researcher via Moodle™ through login information and account activity logs.

Once the purposive sample was reviewed and approved by relevant eXtension officials, the researcher personally contacted each individual either via email or telephone to brief the respondents, "...with respect to the nature and purpose of the interview as part of the informed consent procedure" (Lincoln & Guba, 1985, p. 270).

The purposive sample, consisting of Moodle™ course instructors, was then interviewed using a 'semi-standardized interview' approach implementing, "...a number of predetermined questions and special topics" (Berg, 2009, p. 107). Upon completion of the interview, the respondents were asked to review the interviewer's notes for accuracy and report any discrepancy in an effort to facilitate triangulation. Administration of the interview was conducted following Berg's suggestions for face-to-face interviewing as well as telephone interviews (2009). According to Lincoln and Guba (1985), "[T]he instrument of choice in naturalistic inquiry is the human" (p. 236). For this study, the researcher was the instrument of choice.

Upon communication with the sample group, the interviewer made aware the topic of informed consent. Before beginning an interview, in person or via the telephone, an, "...informed consent slip(s) contain[ing] a written statement of potential risks and benefits" of the study was, "...dated and signed by both the potential subject and the researcher"

(Berg, 2009, p. 88). For individuals participating via telephone, consent forms were returned to the researcher via fax or email with the respondent's signature. The researcher signed the form upon receiving it, and again made the individuals aware of informed consent at the beginning of the telephone interview. For the privacy of the subjects, all responses and information remained confidential. Follow-up interviews were to be conducted dependent upon need and willingness of participants; however, no follow-up interviews were necessary. As data was gathered, the researcher reviewed interview notes for overlapping themes in the collected data.

According to Lincoln and Guba (1985), interviews are "...a conversation with a purpose" (p. 268). The interview procedures outlined in *Naturalistic Inquiry* (1985) were followed during data collection. In order to obtain historical information regarding the development of eXtension and Moodle™ use nationally through Extension, was obtained through unstructured interviews were conducted with individuals who are familiar with the organization's background (Lincoln & Guba, 1985).

The data analysis method that was utilized for this study was the constant comparative method developed by Glaser and Strauss (as cited in Merriam, 1998). According to Merriam (1998), this method focuses on grounded theory that, "...consists of categories, properties, and hypotheses that are the conceptual links between and among the categories and properties" (p. 159). As categories emerged from the data, they were constantly compared against one another until data saturation occurred and a theory was formulated.

The researcher validated the findings of the study by implementing measures to triangulate data collected during the study. Triangulation is used "...among different data

sources to enhance the accuracy of the study” (Cresswell, 2008, p. 266). Credibility was attained through member checking of the individuals interviewed. Member checking is the process whereby the participants of the study are asked to maintain the accuracy of the data attained from them (Cresswell, 2008, p. 267). The researcher ensured trustworthiness by maintaining an audit trail and a reflexive journal throughout the interview process. Peer debriefings were conducted regularly to ensure researcher accuracy.

It is important to note that the interviews conducted with individuals knowledgeable of the history of eXtension and the adoption of Moodle™ throughout eXtension was performed from a heuristic perspective. “Heuristics is a form of phenomenological inquiry that brings to the fore the personal experience and insights of the researcher” (Patton, 2002, p. 107). The researcher’s previous and current, “...personal experience with and intense interest in the phenomenon under study” (p. 107) allowed for better access to the sample group and a more accurate, in-depth look at the topics being researched.

A QUALITATIVE ANALYSIS OF THE HISTORY OF E-EXTENSION (eXtension) AND THE IMPLEMENTATION OF MOODLE™ (A COURSE MANAGEMENT SYSTEM)

Introduction and Theoretical Framework

Computer technologies impact all facets of agriculture, and Extension is no exception. Documentation of the history of eXtension and the adoption of Moodle™ (A Course Management System) by Extension educators nationally provides an opportunity for others to learn from the process. The implementation of Moodle™ as a Course Management System for use throughout eXtension began a new innovation-decision process among Extension communities. However, Rogers (2003) stated that, “For certain innovators, diffusion via the Internet greatly speeds up an innovation’s rate of adoption” (p. 216). The diffusion of innovations theory can be applied to the adoption of Moodle as an online educational delivery system, and it was important to document the process in order to preserve history and provide guidance for the future.

Rogers defined a virtual organization as “a network of geographically-distant employees who are linked by electronic communication... [the] employees may have occasional face-to-face meetings, but most of their daily work is carried out at a distance” (Rogers, 2003, p. 405). eXtension is a virtual organization. As shared on the eXtension.org website (2009), eXtension is an, “...interactive learning environment delivering... knowledge from the smartest land-grant university minds across America... [and it] connects knowledge consumers with knowledge providers.” Harder and Lindner (2008) reported that, “...eXtension could be the key to increasing the relevance of Extension for future generations of clientele” (“Introduction,” para. 3). The adoption of a Course Management System could impact that relevance.

According to Waterhouse (2005), Course Management Systems like WebCT™, Lotus LearningSpace™ and Web Course in a Box™ became popular in the early to mid 1990s. Blackboard™ joined a few years later and quickly became a favorite because of its user-friendly format (Waterhouse, 2005). However, one of the fastest growing course management systems available today is Moodle™. The Moodle™ Course Management System has, "...become very popular among educators around the world as a tool for creating online dynamic websites for their students" ("moodle.org," 2009).

According to Murphrey and Coppernoll (2006), "The evolution of technology is bringing about new ways to collaborate and communicate....However, implementing and gaining acceptance of this technology requires purposeful and planned efforts" ("Conclusions", para. 1). In order to increase the use of distance education by Extension, it is valuable to look at the process by which leaders influence selection and implementation. Northouse (2007) defined leadership as, "...a process whereby an individual influences a group of individuals to achieve a common goal" (p. 3). Kotter (1996) stated that, "Leadership defines what the future should look like, aligns people with that vision, and inspires them to make it happen despite the obstacles" (p. 25). These leaders can often be referred to as change agents. Rogers (2003) stated that, "One main role of the change agent is to facilitate the flow of innovations from a change agency to an audience of clients. For this type of communication to be effective, the innovations must be selected to match clients' needs" (p. 368).

Extension has been educating people for over 96 years, and throughout that time, different approaches to education have been addressed in order to make learning available to more people. In an article by Medved in one of the first *Journal of Extension* issues in 1966,

the topic of distance education was addressed. Medved (1966) stated that, “Television’s rapid development since 1948 has stimulated wide-spread interest in the use of this medium as a teaching tool” (p. 28). Medved also addressed the fact that the potential of using television as a learning tool through Extension had not been fully realized.

Technology continues to change daily and is reshaping the people who utilize technology as well as other technologies being developed (McLuhan as cited in Weller, 2007). These technological advancements have led to several different forms of online learning. According to Williamson and Smoak (2005), technology has “...revolutioniz[ed] the way we learn, entertain ourselves, communicate, do our jobs, and much more” (“Introduction”, para. 1). Online learning is one of the fastest growing ways to learn. Distance learners find eLearning appealing because it allows them, “...the flexibility to take courses that are not bound by time or place” (Dooley, Lindner & Dooley, 2005, p. 3). The increasing trend in online learning has been utilized in many different ways by many different groups and individuals, such as, “...universities, community colleges, K-12 schools, businesses, and even individual instructors” because almost any type of educational content can be accommodated through an online learning approach (Cole & Foster, 2008, p. 1).

In 1997 Tennessen, PonTell, Romine and Motheral stated that,

The information age is supporting technologies, such as the Internet and other digital tools, [that have] enabled work and learning to occur during time periods and locations based upon individual needs...the Internet is now considered a mass media. Individuals may soon consider such electronic connectivity as essential to daily living...Communities recognizing and adapting to these changing needs will be competitive in the information age. (“Introduction”, para. 1 & 2).

The concept of eLearning has become a necessity continuous development, has yielded many different Course Management Systems (CMS), Virtual Learning Environments (VLE) and Learning Management Systems (LMS) (Holmes & Gardner, 2006; Weller, 2007). These terms are often used interchangeably. However, one of the fastest growing Course Management Systems available today is Moodle™.

Moodle™ has two different meanings, the first being an acronym standing for “Modular Object-Oriented Dynamic Learning Environment” (Cole & Foster, 2008, p. ix). The second meaning is the literal term for Moodle™, “...a verb that describes the process of lazily meandering through something... as it occurs you do them, an enjoyable tinkering that often leads to insight and creativity” (Cole & Foster, 2008, p. ix). Moodle™ is an open-source Course Management System created by Martin Dougiamas (Weller, 2007). He created the system in order to fill a particular need – the need of the educator. Dougiamas wanted to build a Course Management System that began with the educator and not the engineering side of creating a website (Cole & Foster, 2008). Moodle™ was started in 1999 and, “Version 1.0 was released in 2002...Moodle™ has continued to evolve at a rapid rate, managed by Martin in Australia and propelled by an active world-wide community of users and developers” (Chavan & Pavri, 2004, “Introducing Moodle,” para. 1).

The implementation of a Course Management System into Extension reflects the continuous effort that Extension has made to utilize new technology as it becomes available. Which is similar to the use of filmstrips, motion pictures, television, telephone and radio that were utilized in the mid to late 40s as “educational media” (Brunner & Pao Yang, 1949, p. 118). Traditionally, Extension education has primarily, “...focused on face-to-face, county-based programming, where typical, natural resource, Extension clientele have been rural

residents who live on the land they own,” but the way that current Extension clientele live and learn is changing and online learning is becoming a necessity (Jackson, Hopper & Clatterbuck, 2004). While Extension specialists can never be replaced, online education is, “...simply another tool through which Extension can interact with its clientele,” providing more information to more people (Jackson et al., 2004, “Background,” para. 2). The need for online learning is becoming ever present and more obvious each year, Williamson and Smoak (2005) stated,

Electronic technology is revolutionizing how we learn, entertain ourselves, communicate, do our jobs, and much more. What does this mean for Extension practitioners? It means that electronic learning or “e-learning” is sending shockwaves throughout the Cooperative Extension System. It means taking advantage of a global approach to learning. Most of all, it means keeping up with strong competition and re-visioning the Extension role in an electronic era (“Introduction,” para. 1)... The choice is simple: either you accept e-learning and adopt it or risk becoming obsolete (“Keeping Pace with E-Competitors,” para. 2).

Purpose and Research Objectives

The purpose of this historical study was to describe how and why eXtension was established and the implementation of Moodle™ as a Course Management System (CMS) within eXtension.

Methods and Procedures

The methodology for this study was a qualitative, heuristic study consisting of personal interviews, both in person and via the telephone. The purposive sample consisted of individuals knowledgeable of the history of eXtension and the implementation of Moodle™ as a Course Management System. Individuals were selected for participation based on their level of familiarity with early Moodle™ use in eXtension. Cresswell (2008) stated that, “...homogeneous sampling is a purposive sample based upon membership in a subgroup with defining characteristics” (p. 640). Individuals were recruited for participation until data saturation was achieved. One-on-one interviews were conducted with individuals face-to-face when possible. The researcher also used telephone interviews to accommodate the schedules of individuals interviewed.

Once the purposive sample was reviewed and approved by the researcher’s peer debriefing committee, the researcher personally contacted each individual via email to brief the respondents, “...on pertinent information about the study, ensuring anonymity, explaining what will and will not be done with the data in the interview and confirming with the respondent the time and place of the interview” (Erlandson et al., 1993, p. 92). Approximately one week after the email was sent; the researcher followed up with each respondent either in person or via the telephone to establish an interview time, date and location. Both face-to-face interviews and telephone interviews were conducted similarly. Upon communication with the sample group, the interviewer made aware the topic of informed consent. Before beginning an interview, in person or via the telephone, “...informed consent slip(s) contain[ing] a written statement of potential risks and benefits” of the study was, “...dated and signed by both the potential subject and the researcher”

(Berg, 2009, p. 88). For the privacy of the subjects, all responses and information remained confidential through the use of confidentiality coding. For example, “S1” for sample1 and a letter that corresponded with the participant. After the interviews were conducted, a request for a follow-up interview was verbally addressed. However, no additional interviews were necessary for the study. To ensure accuracy, a copy of individual, interview transcripts were provided to each participant for his/her personal review via email with a request for any changes, corrections, or additional pertinent information. As data was gathered, respondents were coded and the researcher reviewed interview transcripts for overlapping themes in the collected data.

According to Lincoln and Guba (1985), interviews are “...a conversation with a purpose” (p. 268). The interview procedures outlined in *Naturalistic Inquiry* (1985) were followed during data collection. In order to obtain historical information regarding the development of eXtension and Moodle™ use nationally through Extension, semi-structured interviews were conducted with individuals who were familiar with the organization’s background (Lincoln & Guba, 1985). Individuals were recruited for participation until data saturation was achieved. A total of five individuals were interviewed.

The data analysis method utilized for this study was the constant comparative method developed by Glaser and Strauss (as cited in Merriam, 1998). According to Merriam (1998), this method focuses on grounded theory that “...consists of categories, properties, and hypotheses that are the conceptual links between and among the categories and properties” (p. 159). As categories emerged from the data, they were constantly compared against one another until data saturation occurred and a theory was formulated.

In order to validate the findings of the study, the researcher implemented measures to triangulate data collected during the study. Triangulation was used "...among different data sources to enhance the accuracy of the study" (Cresswell, 2008, p. 266). Credibility was attained through member checking of the individuals who were interviewed. Member checking is the process where the participants of the study are asked to verify the accuracy of the data attained from them.

The researcher also ensured trustworthiness by maintaining an audit trail and a reflexive journal throughout the interview process. Peer debriefings were conducted regularly to ensure the researcher's accuracy. It is important to note that the interviews conducted with individuals knowledgeable of the history of eXtension and the adoption of Moodle™ throughout eXtension was performed from a heuristic perspective. "Heuristics is a form of phenomenological inquiry that brings to the fore the personal experience and insights of the researcher" (Patton, 2002, p. 107). The researcher's previous and current, "...personal experience with and intense interest in the phenomenon under study" (p. 107) allowed for better access to the sample group and a more accurate, in-depth look at the topics being researched.

The participants in this study were Extension educators with an extensive background in Extension. The mean number of years worked in Extension was 22.4 years, with some participants having more than 35 years of experience with Extension. The sample consisted of three females and two males. These individuals were contacted based on their experience with the topic under investigation and one individual was a result of snowball sampling, the process by which the, "...researcher asks participants to identify others to become members of the sample" (Cresswell, 2008, p. 155).

Findings

Participants in the study reported very similar perspectives of the history of distance education. When asked, “When did online learning become a vision of the future?” in a general context, the individuals interviewed stated that distance education (in various forms) began in the early to mid 1980s ranging all the way to the mid to late 1990s and certain types of distance education were occurring even before then (S1A, S1B, S1C, S1D, S1E). When asked this question, most stated that there was a form of distance education in place much before the development of online learning in the form of newsletters, television, telephone, regular postal mail and e-mail – put simply, transferring knowledge and information to individuals not capable of receiving the information first hand was available before the development of the Internet (S1A, S1B, S1C, S1D). However, when referring to the use of online education in Extension, the dates were mid 1980s to 1990s (S1A, S1B, S1C, S1D, S1E).

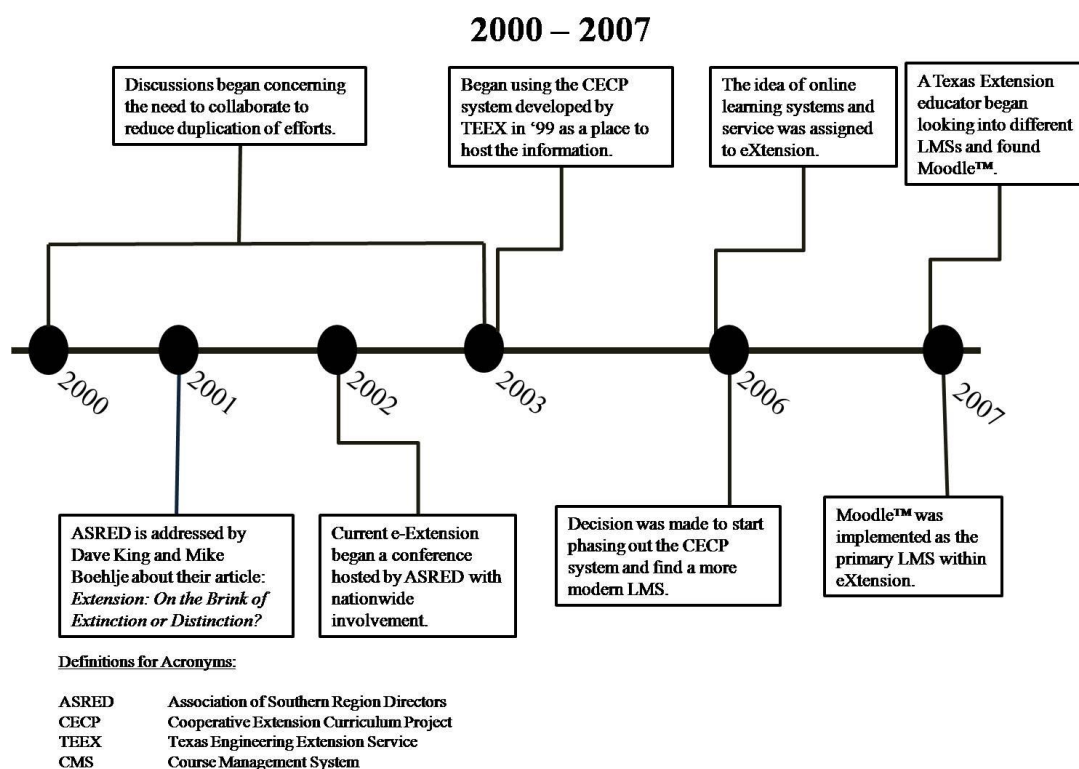
The participants of the study were asked to define eXtension in their own words. The overall collaborative summary of their definition was that eXtension is a national, collaborative effort to provide research-based knowledge and information to larger, broader audiences through the use of online learning (S1A, S1B, S1C, S1D, S1E).

For the purpose of this study, the researcher sought to document the history of events that took place that eventually lead to the establishment of eXtension and the implementation of Moodle™ as a Course Management System for Extension and eXtension efforts. As an educational and research based organization, Extension has always searched for new ways to reach diverse audiences. As the popularity of the Internet became more evident, some Extension educators recognized the need to be involved in that movement and wanted a way

to deliver existing content in a ways, other than the traditional face-to-face method (S1A, S1B, S1C, S1E). Figure 1 is a graphical depiction of the events shared by respondents related to the implementation of Moodle™ in eXtension.

Figure 1.

Timeline of Events Leading to the Implementation of Moodle™ in eXtension



During the 2000-2003 timeframe, discussions across the nation began concerning the need to share information across state lines because the concern of duplication of efforts had recently become a topic of interest (S1A, S1B, S1C, S1D, S1E). Also, the current e-Extension (as it was initially called) began a conference hosted by the Association of Southern Region Extension Directors (ASRED) in 2002. The directors of ASRED had been

addressed by Dave King and Mike Boehlje in relation to their article, *Extension: On the Brink of Extinction or Distinction?* (2000) (S1B, S1E). As a result, the directors took action by sponsoring a conference with nationwide involvement (S1B, S1E). It was understood that the initiative would be

...a public outreach effort that would take some years to organize and fund...other national level players continued to support this initiative as it evolved, including the National Extension Directors and Administrators Association (NEDA), the American Distance Education Consortium (ADEC), the Extension Committee on Organization and Policy (ECOP) and CSREES-USDA (Now the National Institute of Food and Agriculture). (S1B)

Participants shared that Extension was in need of one place to put the plethora of information it had to offer in order to ensure accuracy, less duplication of effort and collaboration among states (S1A, S1B, S1C, S1D, S1E). During the late 1990s, Texas officials began researching ways to deliver online education, “With regard to trying to build some level of richness, interactivity and testing,” as a result Texas Extension began using a rudimentary Course Management System developed by the Texas Engineering Extension Service in 1999 (S1A, S1B, S1C). This was a system that was built in-house (because the agency is part of the Texas system) and, “...partly because the major systems were not very available or were very expensive” (S1B). The in-house Course Management System was used to deliver staff development with individuals with the knowledge to manage such a system (S1B). As a result, the small, “home grown system” (S1B) evolved into the Cooperative Extension Curriculum Project (CECP) in 2003 (S1A, S1B, S1C, S1D S1E). After the start of CECP, discussion continued regarding a national effort with focus on,

...how we could share resources using technology. That grew from sharing learning resources internally; to include creating outreach to our clientele using technology...states recognized that if they pitched in some of their money in a national pot that they could do a better job identifying tools and resources that would extend extension electronically. (S1C)

At the same time, the CECP Course Management System was being developed by Texas Extension Engineering Service; eXtension was also in the beginning stages of development. Because both platforms were in the beginning stages, and eXtension felt the need for a Course Management System, it seemed natural for the two groups to merge their efforts. However, there was always a general idea that the CECP system would be phased out in order to implement a newer, more efficient Course Management System. According to one respondent, "These were two parallel efforts, started at the same time, fueled by different groups of people, traveling at different rates of speed, but with the intent that CECP would eventually disappear...it has essentially done so" (S1B). In 2006, the decision was made that, "...this whole online system and service...ought to be given over to eXtension" (S1B). After the merge occurred in the fall of 2006, "...the decision was made that we proceed and start down a path towards acquiring and adopting some kind of system for use by eXtension" (S1B). In early 2007, an individual within Texas Extension began researching different Course Management Systems available. After much research and exploring, the individual decided to look further into the Moodle™ Course Management System. Out of his/her own pocket, a year of service was purchased with a Moodle™ hosting site in order to further research the platform. Each individual interviewed played an integral role in the discovery

and implementation of Moodle™ into eXtension and in the spring of 2007 Moodle™ was adopted as the primary Course Management System within eXtension (S1B, S1C, S1D).

The Moodle™ Course Management System was chosen for a number of reasons (S1B):

- It contained much needed features,
- It was a flexible platform and open-sourced,
- It had no licensing restrictions,
- The Moodle™ system was free and
- There were several hosting sites available for a fair price.

In the summer of 2007, after eXtension leadership had adopted Moodle™ as the method of online delivery, the process of teaching other Extension educators how to use the system began. Remote Learner™, whom eXtension is contracted with to provide the Moodle™ hosting service, held a training session in Nashville, Tennessee for Extension educators interested in the efforts of eXtension (S1B, S1C). Because the individual from Texas Extension had prior experience with the Moodle™ CMS and could relate Moodle™ to Extension situations, Texas became a point of contact because of their ability to answer Moodle™ questions from an Extension perspective (S1C). According to one participant, “...since the initial implementation, other states have really stepped in especially those who really need to use online learning to leverage their resources. As a result, they are helping take it from implementation to adoption” (S1C).

As of 2009, eXtension was continuing to evolve and there are now two Moodle™ websites, *pdextension.org* (PDC) and *campus.extension.org* (CAMPUS). PDC is used for internal (within Extension) professional development and CAMPUS is used for external

outreach. Initially, Moodle™ was intended as a place for Communities of Practice (CoPs) within eXtension to deliver online content, but since there are now two websites with different audiences, Moodle™ is not only used by eXtension CoPs, “...but also by Extension faculty at large to support their traditional education efforts” (S1B).

The evolution of eXtension was described best by one participant who used an analogy relating where eXtension is currently and where it is going, comparing it to the building of a retreat center on the Internet (S1C). When the discussion of sharing the Course Management System across Extension nationally began, a blue print was made, ideas were put on paper and interest in building the eXtension house was established (S1C). Soon thereafter, various individuals contributed monetary resources and supplies to support the building of the eXtension house (S1C). Moodle™ is one component of the eXtension house. The researcher believes that most all of the participants would agree with the following eXtension house analogy:

...we've acquired our resources and now we're busy building the house... [it] is nicely framed out, but it's certainly not to a point where all the walls are in place and now we have some modifications that we need to consider to the original plans...I think that the house is being built very slowly and purposefully...because we recognize that technology is ever evolving and our family is big and growing in terms of the Extension family adopting eXtension (S1C).

All individuals interviewed reported that eXtension has a bright future, but that there are barriers to overcome and walls to build in the retreat center before it will be completely adopted and accepted by members of Extension (S1A, S1B, S1C, S1D, S1E). As shared by

one participant, "...everybody's got to have a common vision and work towards that end" (S1E).

Each of the individuals interviewed maintained very positive views of online learning, and all shared that online learning is a valuable part of Extension's future. However, barriers to adoption were identified that were indicated as items that require attention in order for eXtension to be adopted widely. Barriers included:

- Agents have limited time to dedicate to the design and development of online learning (S1C, S1D, S1E),
- Some Extension educators are unsure of technology (how to use technology in general and how to relate technology to their clientele base) (S1C),
- Limited number of technology savvy 'extension purists' due to fiscal constraints (S1C),
- Extension educators not being recognized for their online efforts (S1D),
- Need for more guidelines as the eXtension system continues to evolve (S1D, S1B),
- Need for educating Extension educators about mis-perceptions of eXtension, and let them know it is there as a reference not a replacement (S1D,S1E),
- State funding is not always able to be allocated towards online learning (S1A,S1C, S1E) and
- The current lack of marketing efforts (S1E, S1D).

Conclusions, Implications, and Recommendations

The purpose of this historical, heuristic study was to describe how and why eXtension was established and the implementation of Moodle™ as a Course Management System

(CMS) within eXtension. The history of the development of eXtension became the ultimate discussion. Prior to Moodle™, Extension was utilizing the Course Management System developed by the Texas Engineering Extension Service called the Cooperative Extension Curriculum Project or CECP. This system was a great starting point, but became archaic and it was determined that an easier system should be identified. Moodle™ was implemented in 2007.

Based on the findings from this study, one can conclude that as eXtension and the use of Moodle™ continues to grow and develop, but guidelines should be created but remain flexible enough to grow with the system in order to sustain the reputation of quality and the research-based background that is the foundation of eXtension. As revealed in the findings, the importance of monitoring the content that is made accessible both on the eXtension website and the two Moodle™ websites is critical in order to provide timely, relevant and accurate materials via online courses both internally and externally for community outreach.

Findings from this study revealed that the eXtension system is growing and that an awareness and use of the system has become standard practice throughout Extension nationally. However, the barriers addressed within the study, should not go unrecognized. The design, development and delivery of quality online course materials require a significant amount of time and effort. Given that Extension educators have a limited amount of time to dedicate to these activities, it is recommended that efforts be put in place to meet this need. Based on findings of this study, possible efforts include the inclusion of these practices in job descriptions, job sharing across agencies, skill training and recognition for participation.

One issue revealed in the study was specifically connected to credit and recognition as it relates to online content. In any field, recognition is an important factor. However, in

the field of Extension, where the delivery of education is a primary function, recognition is vital to a lasting career. Respondents shared that it is important that Extension educators who dedicate time to creating online materials not go unnoticed.

While research has shown that there is an interest by Extension educators in online professional development, it is apparent that some individuals do not know how to use the technology to serve their clientele (Senyurekli, Dworkin, & Dickinson, 2006). It is recommended that the service component of eXtension continue to provide Extension educators with the knowledge and support to create and utilize online courses. Further research should be conducted on how to make online learning a recognized form of scholarship within Extension.

Findings from this study revealed that eXtension is continuing to expand. Based on conclusions, it is recommended that eXtension continue to be marketed as a resource to help Extension educators and not as a replacement for their positions. Marketing of eXtension, as addressed by one participant, needs to start at the local level in order to bring about awareness by Extension educators and enable them to use eXtension resources and not feel threatened by it (S1E).

The current state of the economy creates both opportunities and challenges to the delivery of educational materials online. While delivery of materials online is perceived by some to be less expensive, based on findings from this study it should be recognized that given current economic conditions some states are unable to contribute funding towards national objectives such as eXtension, no matter how low the cost. It is recommended that eXtension encourage states to engage in the national objective in ways that can allow them to meet state needs. The advantages of reduced travel expense using online conferencing and

increased reach to clientele using Moodle™ must be documented and shared with leadership. Additional research should be conducted in this area to provide agencies with data that can support the use of technology to meet individual needs and reduce costs.

Findings from the study revealed that the Moodle™ Course Management System is a beneficial addition to the eXtension organization. While it was intended to be a delivery system for Communities of Practice to provide their online materials, it has become a platform for the delivery of internal content specific to Extension through “eXtension Professional Development Courses (*pd.c.extension.org*), as well as a library of knowledge for community outreach through the eXtension Campus Moodle™ Site (*campus.extension.org*). Further study should be conducted to determine the strengths, weaknesses, opportunities and threats of continuing the use of Moodle™ as a Course Management System through eXtension. Findings from this study make known that Extension has nationally embraced the delivery of quality educational materials online and the journey is just beginning.

AN EXAMINATION OF THE STRENGTHS, WEAKNESSES, OPPORTUNITIES
AND THREATS ASSOCIATED WITH THE ADOPTION OF
MOODLE™ BY E-EXTENSION (eXtension)

Introduction and Conceptual Framework

Williamson and Smoak (2005) stated, “Electronic technology is revolutionizing how we learn, entertain ourselves, communicate, do our jobs, and much more....It means that electronic learning or “e-learning” is sending shockwaves throughout the Cooperative Extension System”(“Introduction,” para.1). Moodle™’s use as a Course Management System throughout eXtension began a new innovation-decision process throughout the Cooperative Extension community. Rogers (2003) stated that, “For certain innovators, diffusion via the Internet greatly speeds up an innovation’s rate of adoption” (p. 216). The diffusion of innovations theory can be applied to the adoption of Moodle™ as an online educational delivery system, and it is can be helpful in understanding the diffusion process by looking closely at the utilization of Moodle™. This includes gaining an understanding of purposes for use, feelings about the process, and opinions regarding strengths, weaknesses, opportunities and threats of Moodle™ as an online Course Management System for use in eXtension.

eXtension is a virtual organization which is described by Rogers (2003) as, “...a network of geographically-distant employees who are linked by electronic communication... [the] employees may have occasional face-to-face meetings, but most of their daily work is carried out at a distance” (p. 405). As shared on the eXtension website, it is an, “...interactive learning environment delivering... knowledge from the smartest land-grant university minds across America... [and it] connects knowledge consumers with knowledge

providers” (eXtension.org, 2009). Harder and Lindner (2008) stated, “...eXtension could be the key to increasing the relevance of Extension for future generations of clientele” (“Introduction,” Para. 3).

Research focused on the use of technology to deliver programming across Extension has been conducted on methods such as online conferencing (Murphrey & Coppernoll, 2006), online professional development (Senyurekli, Dworkin, & Dickinson, 2006) and even the Internet as an opportunity for education (Tennesen, PonTell, Romine, & Motheral, 1997). In fact, multiple studies can be found that focus on Extension educator’s interest in the concept of online learning. Regardless, many individuals simply do not understand what eLearning is or how to participate in an online learning experience (Williamson & Smoak, 2005; Edwards, McLucas, Briers, & Rohs, 2004; Tennesen, et al., 1997). Studies focusing on the utilization of Moodle™ as a course management system for education have been documented by several sources (Martín-Blas & Serrano-Fernández, 2009; Romero, Ventura & García, 2007; Chavan & Pavri, 2004); however, little research has been conducted concerning the use of Moodle™ as a course management system for Extension. While some Extension personnel and clients are adopting the use of eLearning delivery systems such as Moodle™, it is not known what elements are impacting the adoption and what steps could be taken to increase adoption.

While some may question the significance of eLearning quality in relation to face-to-face learning quality, a study by Koch, Townsend and Dooley suggested otherwise. The authors found that there are, “...no significant differences between the traditional students and the Web-based students’ scores on any of the five LSI scales [used in their study]” (Koch, Townsend & Dooley, 2005, p. 80).

Theoretical Framework

The theoretical framework for this study is based on the diffusion of innovations. According to Rogers, “The innovation-decision process is the process through which an individual (or other decision making unit) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision” (Rogers, 2003, p. 216). Rogers (2003) stated, “*Diffusion* is the process in which an innovation is communicated through certain channels over time among members of a social system” (p. 5). It is important to first understand the diffusion process in order to understand the factors that impact adoption. Rogers (2003) stated that, “The perceived attributes of an innovation are one important explanation of the rate of adoption of an innovation” and those attributes are, “(1) relative advantage, (2) compatibility, (3) complexity, (4) trialability and (5) observability” (p. 221-223).

Purpose and Research Objective

The purpose of this study was to identify the strengths, weaknesses, opportunities and threats (SWOT) associated with the use of Moodle™ as an educational tool in eXtension from the perspective of ‘very active’ and ‘active’ course instructors utilizing Extension Moodle™ websites.

Methods and Procedures

This study was a qualitative study conducted via personal interview or over the telephone. Due to the fact that several of the respondents were located across the United States and face-to-face interviews were not practical in all cases, some interviews were

conducted via telephone. The overarching goal of each interview was to identify the predetermined strengths, weaknesses, opportunities and threats associated with the use of Moodle™ as an educational tool in eXtension from the perspective of active users of the system. According to Goodstein, Nolan and Pfeiffer (1993) a SWOT analysis, "...involves an in-depth, simultaneous study of both the...internal *strengths* and *weaknesses* and those significant factors outside the organization that may positively or negatively impact its future, the external *opportunities* and *threats* confronting the organization" (p. 226). This study used the SWOT analysis approach. Themes emerged from the data that could be placed into the predetermined categories of strengths, weaknesses, opportunities and threats. In order to establish a logical ranking of the emergent themes the researcher used Fraenkel and Wallen's (2009), "...common way of interpret[ing] content analysis data through the use of frequencies (i.e., the number of specific incidents found in the data)" (p. 480).

The purposive sample for this study consisted of 'very active' and 'active' course instructors utilizing Extension Moodle™ websites in order to gain the richest information. 'Very active' was defined as individuals who have accessed a Moodle™ course recently and at least ten or more times between January and July of 2009. 'Active' was defined as individuals who have logged in recently and at least three or more times between January and July of 2009. Activity levels were determined based on individual activity reports from pdc.extension.org and campus.extension.org websites. According to Cresswell (2008), homogeneous sampling is a purposive sample based upon membership in a subgroup with defining characteristics. The defining characteristics of the sample for this study were determined by utilizing data readily available to the researcher via Moodle™ through login information and account activity logs. The individuals who had logged in recently and

frequently over an extended period of time were classified as ‘very active’ or ‘active’ and determined to be the best sample for this study.

After the purposive sample was reviewed and approved by a team of individuals knowledgeable of qualitative methods, the researcher contacted each respondent via email to brief them regarding, “...pertinent information about the study, ensuring anonymity, explaining what will and will not be done with the data in the interview and confirming with the respondent the time and place of the interview” (Erlandson, et al., 1993, p. 92). The purposive sample, consisting of Moodle™ course instructors, was then interviewed using a ‘semi-standardized interview’ approach implementing, “...a number of predetermined questions and special topics” (Berg, 2009, p. 107). Upon completion of the interview, the respondents were asked to review the interviewer’s notes for accuracy. Administration of the interview was conducted following Berg’s suggestions for telephone interviews (2009). According to Lincoln and Guba (1985), “[T]he instrument of choice in naturalistic inquiry is the human” (p. 236). For this study the researcher was the instrument of choice.

Upon communication with the sample group, the interviewer made aware the topic of informed consent. Before beginning an interview, an, “...informed consent slip(s) contain[ing] a written statement of potential risks and benefits” of the study were, “...dated and signed by both the potential subject and the researcher” (Berg, 2009, p. 88). For the privacy of the subjects, all respondents remained confidential. Follow-up interviews were conducted dependent upon need and willingness of participants. These interviews were conducted over the phone, or through further contact via email when necessary. As data was gathered, the researcher reviewed interview notes for overlapping themes in the collected data.

Validation of the study's findings was conducted through triangulation of the data collected. Cresswell (2008) states that triangulation is used "...among different data sources to enhance the accuracy of the study" (p. 266). Credibility was attained through member checking, the process whereby the participants of the study are asked to maintain the accuracy of the data attained from them. Trustworthiness was maintained by the researcher keeping an audit trail and a reflexive journal throughout the process. To ensure the researcher's accuracy, peer debriefings were conducted regularly.

Findings

Analysis of the transcripts of the individuals interviewed revealed 11 emergent themes regarding the use of Moodle™ as an educational tool in eXtension. From these themes, the researcher divided them into the predetermined SWOT categories: strengths, weaknesses, opportunities and threats. Findings were ranked in order of importance based on the number of respondents who mentioned the theme and then again ranked based on how many times the respondents mentioned the theme.

Strengths

The strengths leading to the adoption of Moodle™ by Extension educators are that overall; Moodle™ is an easy to use, cost effective, malleable platform with many effective development tools built into the system for Extension use. The educators interviewed were favorable or predisposed to eLearning. Online learning was shared as an effective way to reach new or hard to reach audiences and it was reported that the current technical support in place by eXtension is valuable to the support of Extension educators. It was also reported by respondents that online learning provides a versatile platform for many different types of learners.

Table 1.

Respondents' Comments Regarding Strengths of Moodle™ Use for eXtension

Strength	Respondent Codes	Number of Respondents	Number of Times Mentioned by Respondents
Moodle™ is an easy to use, cost effective, malleable platform with many development tools built in.	S2A, S2B, S2C, S2D, S2E, S2F, S2G, S2H, S2J	9	36
Extension educators were favorable toward eLearning.	S2A, S2B, S2C, S2D, S2E, S2F, S2G, S2H, S2J	9	9
Online learning reaches new or hard to reach clientele for Extension.	S2B, S2H, S2D	3	5
Current technical support in place by eXtension is valuable to the support of Extension educators.	S2A, S2F, S2D	3	4
Online learning provides a versatile platform for many different types of learners.	S2B, S2E	2	3

Throughout the study, five different strengths were identified as noted in Table 1. The first strength noted by all individuals interviewed was that Extension educators are favorable towards eLearning (S2A, S2B, S2C, S2D, S2E, S2F, S2G, S2H, S2J). The majority of the participants interviewed had a positive outlook for eLearning and were interested in the area. While one participant was not as positive towards eLearning as the rest, the participant still saw a need for online learning and shared that it might not appeal to all (S2E).

The next strength identified related to specific characteristics of Moodle™. Extension educators participating in the study reported Moodle™ to be an easy to use, cost-effective, malleable platform with many effective development tools built into the system

that were useful to Extension. This finding was supported by all nine study participants. In fact, each participant mentioned these characteristics, with some of the items being mentioned numerous times throughout the interviews resulting in 36 responses related to the Moodle™ platform being easy, flexible, free, cost-effective, open-sourced, accessible, available and containing many useful tools within.

While participants reported seeing value in eLearning, they also shared that it must be treated with as much care and responsibility as if it were any other form of learning. One participant who believes that online learning is a good thing said that in teaching online learning, "...the learning principles are the same no matter if it's traditional or online....All of the things that matter when you are face-to-face, matter when you are online..." (S2G). Another participant shared that online learning is not a substitute for face-to-face learning in all situations, but still feels that well designed eLearning can be an effective alternative to face-to-face learning when flexibility is needed (S2H). Other participants in the study shared that online learning can be a great alternative learning method and that it should be implemented in education in any form possible (S2F, S2A).

The third strength discovered was that online learning helps Extension educators reach new or hard to reach clientele. The three respondents who commented on online learning broadening Extension's reach held a basic understanding that online learning helped them reach people they would not normally be able to reach. One respondent stated, "...we started doing stuff face-to-face, but we wanted to reach more people across the state that couldn't come ... [with online learning] they can do it from home, go to their local county office and use the internet there" (S2B). Respondent S2B also stated that, "I think for Extension it [online learning] gives us a unique opportunity to reach even broader

audiences.” Another respondent stated that, “If you can get your stuff on Moodle™ where people have access to it you are broadening your audience...that’s where the opportunities are” (S2D). As shared by one respondent, online learning provides, “...accessibility, they don’t need to travel anywhere...It’s a good solution for ‘just in time’ information needs” (S2H).

The fourth strength mentioned by respondents was the technical support that is currently in place for Moodle™. While each of the respondents mentioned they have rarely needed extensive technical support, when they have needed assistance, “...any time, whatever time I’ve had any small issues having something set up...I’ve gotten just the right kind of support” (S2A). Another respondent who was receiving assistance from the Texas AgriLife Extension eLearning group, contracted national Moodle™ support for eXtension stated that, “It’s been really good. We developed a lesson series...and we’ve worked with specialists from across the Southern region...it’s been a good project. Part of the reason it’s been so good is we had such good IT help...” (S2F).

The final strength noted in the study was that Moodle™ provides a versatile platform for many different types of learners. One participant indicated that they were not the type of learner who would enjoy sitting at a computer to learn, because their work situation required that they use a computer for long hours. The respondent indicated that reading a print out would be more comfortable, Moodle™ has that capability (S2E). Another respondent said, “...you can deliver content in a variety of different ways” and has found that some learners prefer to, “...print things out, look at them on paper. You can deliver it that way, but you can also have additional ways to offer it for people who want to get more interactive as well. So those differences are there” (S2B).

Weaknesses

There were two major weaknesses identified in the study. The first weakness related to the nuances of Moodle™ as a Course Management System that requires a learning curve by Extension educators. The second weakness was that the adoption of Moodle™ by Extension educators across the eXtension network is weakened by the fact that it is not readily identifiable as an eXtension initiative and thus does not receive the marketing exposure as other eXtension initiatives. Table 2 describes respondent's comments regarding weaknesses of Moodle™ use.

Table 2.
Respondents' Comments Regarding Weaknesses of Moodle™ Use for eXtension

Weakness	Respondent Codes	Number of Respondents	Number of Times Mentioned by Respondents
Nuances of Moodle™ as a Course Management System require a learning curve by Extension educators.	S2A, S2B, S2C, S2D, S2G, S2J	6	9
Moodle™ is not readily identifiable as an eXtension initiative and does not receive the marketing exposure of other eXtension initiatives.	S1A, S2D, S2G, S2H	4	7

When discussing possible weaknesses of the Moodle™ Course Management System, two major themes emerged as prevalent. The first was the minor nuances of Moodle™ that require a learning curve by Extension educators. One respondent stated that there were parts of Moodle™ that seemed somewhat less intuitive than others; however, he/she also commented that with patience and practice, he/she was able to persevere (S2A). Another respondent, when asked about Moodle™'s weaknesses, said that it was, "Just minor things

here and there, but overall, I've got a good impression...but for the overall design it's a lot easier than some, a little more difficult than others, but overall, a good system" (S2J).

Another respondent said that he/she felt like, "...every system has its own pluses and minuses...even though it does have some of those quirks, even if you spend just a little bit of time working with it, you can overcome it completely" (S2B).

The second weakness identified by participants related to the concept that the eXtension network is weakened by the fact that Moodle™ is not readily identifiable as an eXtension initiative and thus does not receive the marketing exposure as other eXtension initiatives. One respondent stated,

...I think its [Moodle™] an integral part of eXtension....When I get on eXtension, I don't see any direct links to online learning. At least not in the CoP [Community of Practice]. I'm in...I don't spend that much time on eXtension, but I have looked on there to try and find the links for what's on Moodle™ through the eXtension site (S2D).

Another respondent shared,

...there is not an easy path from...that initial Google™ search to the deepest, richest, most advanced piece of information that we [Extension] can provide, ought to be the most clean, easy, and simple path as possible...I don't think we've [eXtension] put all of that together in that fashion yet, and that's where I think we [eXtension] should be going (S2A).

While yet another respondent stated that, "...right now when you look on eXtension the Moodle™ resources that are available aren't apparent...there's not really the 'course' approach from the main eXtension webpage. There's not a good tie for the public to access

courses verses just information resources” (S2G). Another respondent was quoted saying, “I think unless they [eXtension] start marketing it [Moodle™] more it will always kind of be the step child of eXtension...because from what I can see, that [Moodle™] is not given the attention it needs to be”(S2H).

Opportunities

Opportunities to increase the adoption of Moodle™ identified by participants included the ability of eXtension to market Moodle™, Extension educators continuing to see online learning as an important tool in Extension programming, as well as seeing online learning as a mechanism for reaching new and hard to reach audiences, positive technical support that is currently in place to support the Extension educators developing online learning, eXtension producing quality curriculum causing people to look to eXtension as a resource and the possibility of online learning becoming a funding source for Extension efforts. Respondent’s comments regarding opportunities for Moodle™ use based on the number of respondents who replied and the number of times the response was mentioned is documented in Table 3.

Table 3.
Respondents' Comments Regarding Opportunities for Moodle™ Use for eXtension

Opportunity	Respondent Codes	Number of Respondents	Number of Times Mentioned by Respondents
The ability of eXtension to market Moodle™.	S2B, S2F, S2D, S2H	4	7
Extension educators see online learning as a mechanism to reach new and hard to reach audiences.	S2B, S2H, S2D	3	4
Positive view of technical support currently in place to support Extension educators in the development of online learning.	S2A, S2F, S2D	3	4
eXtension producing quality curriculum causing people to look to eXtension as a resource.	S2B, S2F	2	2
The possibility of online learning becoming a funding source for Extension efforts.	S2E, S2J	2	2

Respondents shared that eXtension has the opportunity to market Moodle™. One way to make sure eXtension remains on, "...the cutting edge...we just need to make sure the people that are developing the content...are developing more and more stuff that sort of challenge the system and making sure it's not stagnant" (S2B). One respondent expressed concern that eXtension promotional materials and, courses developed by faculty are rarely mentioned in public venues (S2H). Respondents shared that eXtension should have, "...a section dedicated to courses and it should be plainly visible. I went to eXtension.org and they don't have many links to the courses" (S2D).

The second opportunity shared by participants related to the potential for online learning to serve as a mechanism to reach new or hard to reach audiences. One respondent stated, "I think for Extension it gives us a unique opportunity to reach even broader

audiences” (S2B). The Moodle™ Course Management System is seen as platform for expanding our audience, “If you can get your stuff on Moodle™ where people have access to it, you are broadening your audience” (S2D).

Technical support, while also mentioned as strength, was also shared as an opportunity. The technical support that is currently in place by eXtension for the Moodle™ platform was indicated as having been successful in assisting Extension educators in their development of online courses. One respondent attributed the success of development to the fact that, “...we had such good IT help” (S2F). The researcher placed technical support in both the strengths and weaknesses categories, because it is not only a current strength already in action, but was indicated as an opportunity that eXtension could continue to build upon.

Participants shared that if Extension professionals continue to create quality curriculum, eXtension will continue to grow as a respected resource. One respondent shared, “I think if eXtension starts turning out more and more material that’s highly interactive and showing that it works and people are engaging in it and learning and understanding, then people will want to deliver their materials through eXtension instead of through their own private stuff [system], and that adds to the overall benefit of eXtension as a place to go to get that information (S2D).

Another respondent shared, “I think as long as there are specialists committed to creating the content for eXtension, I think that it will be a good tool. I think they’ll continue to use Moodle™. But we have to work in tandem” (S2F).

A final opportunity addressed by two respondents was that online learning could be a potential funding source for Extension efforts. One of the respondents stated, “I think one of the biggest ones [opportunities] is e-commerce. If we can produce courses that people will

pay for, that could be a huge revenue stream for eXtension” (S2E). Another respondent shared that they had tried the area of e-commerce through the Moodle™ system and had experienced problems with the system accepting payments. The respondent shared that, “If there were a fairly easy way to accept payments, provide certificates and those kinds of things for the continuing education type I think that’s an opportunity because it’s the area that we’ve struggled in trying to adapt Moodle™ to that use” (S2J).

Threats

The key threats to the adoption of Moodle™ shared by respondents related to the constant changing and evolving of technology itself. Participants shared that it is not possible to predict these changes. Participants further shared that unless the Extension community and culture encourages and nurtures online learning through rewards and recognition and sufficient technical support, adoption will be hindered. An additional threat related to the need for marketing exposure as it relates to eXtension as a whole. Respondent comments regarding the threats of using Moodle™ as a Course Management System are shared in Table 4.

Table 4.
Respondents' Comments Regarding Threats of Moodle™ Use for eXtension

Threat	Respondent Codes	Number of Respondents	Number of Times Mentioned by Respondents
The evolution of technology will change in ways that cannot be predicted.	S2A, S2C, S2D, S2E, S2F, S2J	6	7
Extension community and culture does not encourage and nurture online learning through rewards and recognition.	S2H, S2E, S2G, S2J	4	6
The possibility that there will not be enough technical support in place to help Extension educators.	S2D	1	1
eXtension not providing the marketing exposure necessary.	S2H	1	2

The primary threat identified in the study related to the evolution of technology and the fact that it continues to change in ways that cannot be predicted. Participants expressed concern that, "...anytime you get something like this and everyone starts pursuing it as the next, new, great, wonderful thing and then the next time something else comes up, then it's the new great thing" (S2J). Overall, respondents expressed concern that once they learned the current Course Management System, a change in technology would hinder further adoption.

The second threat addressed by the respondents related to the lack of recognition across the Extension community and culture related to online learning. Encouragement through rewards and recognition was indicated as a requirement for further diffusion. One respondent stated,

I think people have better things to do with their time. Especially in the university setting. People need a quick reward and if they can write three refereed journal articles in the same time it takes them to get a Moodle™ course up and running, then they are going to go where the rewards are. So, until there are better rewards for eXtension scholarship that become more prevalent, I don't think we're there yet. I think people are still questioning the scholarship in eXtension and, when you're on a tenure track, you've got to do things quick, you don't have time for the eXtension tech support to help you out. You've got to get things done in five years or you're out of a job (S2E).

Another respondent shared that a threat to online learning within Extension is because,

...they don't receive recognition for it, so they don't see developing online learning, on any platform, as an important part of their job...we need different Extension organizations to make that a priority and say, 'this is valuable and we recognize you for this, and it's part of your job'...it can't just be in addition to, it has to be part of their job (S2H).

Another concern addressed by one participant was that there is the need for continuous technical support provided through eXtension for Moodle™. The respondent stated, "I guess there is a certain amount of maintenance and upkeep that goes into it. You would hope that that wouldn't go away ... And have sufficient people that are needed to provide the assistance and help that is needed" (S2D).

The final threat mentioned was that eXtension is not providing sufficient marketing exposure for Moodle™. Respondent S2H was quoted in the weakness section as saying, "I

think unless they start marketing it [Moodle™] more it will always kind of be the step child of eXtension....because from what I can see, it [Moodle™] is not given the attention it needs to be” (S2H). It was also mentioned in the threats section because, while it is currently a weakness in the system, if it goes unaddressed, it could become a threat.

Conclusions, Implications and Recommendations

The strengths revealed in this study suggest that Extension educators that use Moodle™ have a positive view of online learning and accept that it is becoming a part of their career. These individuals identified Moodle™ as an easy platform for developing and delivering their online learning to various audiences. They also described online learning as a method for reaching new or hard to reach Extension clientele and held the perspective that online learning is a versatile form of learning for many different learner types. Effective technical support was valued by these Extension educators. Based on the strengths of the study, it can be concluded that Moodle™ is an appropriate platform for the individuals using it, Extension educators definitely realize its worth and eXtension is providing valuable technical support for those using the Moodle™ Course Management System. It is recommended that eXtension continue to encourage and support Extension educators in their online learning efforts. Further research should be conducted concerning the identification of potential audiences to reach using these methods and also measurement of value related to online efforts.

Findings from this study revealed that before online learning can become an integral part of an Extension educator’s career there are issues to be addressed. A need exists to provide scholarly recognition for online learning activities and services. Study participants indicated that the Moodle™ Course Management System was an easy platform for

development of online learning, thus it can be concluded that the potential for increased adoption is possible. These findings also lead one to conclude that individuals are more willing to accept online learning as part of their jobs if the Course Management System is easy to learn, readily available to them and their audiences, with the necessary technical support to help them when needed. Comments shared during the interviews reveal an obvious concern regarding bridging the gap between the eXtension website and the Moodle™ sites. Based on these findings, it is recommended that a link to Moodle™ courses be provided on the main eXtension.org website and that links to these courses be made obvious and easily accessible. It is recommended that additional research be conducted with Extension educators using the Moodle™ platform related to the concept of how to incorporate online learning into their job description and what steps should be taken in order to create the necessary link between eXtension and the Moodle™ Course Management System.

Based on the findings of this study, there are numerous opportunities associated with the Moodle™ platform within eXtension. Study participants articulated the need and availability of online learning. Findings reveal that the eXtension community can continue to grow in the area of online education if eXtension supports the development of online learning through Moodle™ by further marketing the concept and practice of Moodle™. Currently, courses on Moodle™ are being offered for free; however, based on findings, the Moodle™ Course Management System could easily be used as a source of income for eXtension and other Extension entities. It is recommended that research be conducted to establish possible marketing strategies for the Moodle™ platforms offered via eXtension. Additional research

would also be helpful related to potential course fees and student's willingness to pay for online courses offered through Extension.

While eXtension is currently utilizing Moodle™ as the Course Management System of choice, it is important to recognize that technology is ever changing. Respondents expressed their concern that the changing of technology is unsettling to their idea of online learning. While eXtension should not try to hinder the development of online learning, it is recommended that drastic changes not be made to the type or style of the Course Management System currently in place. Respondents also mentioned that currently in the Extension community online learning is not generally the supported or encouraged form of education. eXtension, as an organization, would be smart to recognize this as a threat and find ways to encourage further implementation and adoption of online learning across Extension. It is also recommended that the results of this SWOT analysis be used to encourage further adoption of the Moodle™ Course Management System among Extension educators through promotion to Extension educators in their development of online learning.

Based on the findings of this study and Rogers' innovation-decision process, it can be concluded that Extension educators have proceeded fully through three steps of the process: knowledge, persuasion and decision. Currently, Extension educators are in the implementation phase and putting the innovation to use. eXtension must acknowledge the final stage - confirmation, which is where, "...the individual seeks reinforcement for an innovation-decision already made but may reverse the decision if exposed to conflicting messages about it" (Rogers, 2003, p. 216-217). Based on findings from the study, eXtension's sustained engagement and support of the Moodle™ platform will be critical to the continued diffusion and adoption of online learning across Extension on a national scale.

However, it is recognized that diverse efforts across Extension will determine the overall impact of eLearning in the future. eXtension's adoption and diffusion of the Moodle™ platform is one part of a much larger picture.

SUMMARY AND CONCLUSIONS

For this study, two separate sets of interviews were conducted. The first set involved interviewing individuals knowledgeable of the history of eXtension and resulted in a historical analysis of eXtension and the purpose and implementation of Moodle™ as a Course Management System. The second set involved interviewing ‘very active’ and ‘active’ instructors of online courses offered via the Moodle™ Course Management System and resulted in an analysis of the strengths, weaknesses, opportunities and threats of utilizing the Moodle™ Course Management System in eXtension from the perspective of Extension educators actively utilizing the system.

Findings from the historical study established that eXtension evolved during the time frame of 2000-2003 and the Moodle™ Course Management System was implemented during spring 2007. Findings revealed that eXtension and Moodle™ have been a beneficial addition to the eXtension organization, but that it is a journey that is far from complete. The analysis of the strengths, weaknesses, opportunities and threats (SWOT) revealed that Extension educators are comfortable with the Moodle™ Course Management System and recognize the value of utilizing such a system, but that there are barriers eXtension must recognize if continued growth of a Course Management System is desired.

Conclusions and Implications

The eXtension community is present and ever growing and the development and growth of the Moodle™ Course Management System within eXtension is also growing at a rapid pace. However, for the two entities to grow together it is important that guidelines be put into action to continue the research-based background that is the foundation of eXtension. The continued delivery of quality instruction via Moodle™ requires that efforts be made to

include online education as part of job descriptions, job sharing across agencies, skills training, as well as recognition. Extension educators currently a part of online education should not go unnoticed. In addition, it was concluded that marketing efforts are needed to make it easy for Extension educators to understand that the eXtension initiative is a network that is there to assist and not replace them. Finally, it was concluded that the Moodle™ Course Management System has definitely been a beneficial addition to the eXtension organization. Findings from this study reveal that online education has been accepted by Extension educators, but in order to continue to deliver quality education online, a collaborative effort is required.

Study findings point to issues or aspects beyond the scope of evaluating a Course Management System. Findings from the SWOT analysis reveal that the Moodle™ Course Management System is currently the most appropriate platform from the perspective of current users. Participants of the study have found that Moodle™ is an easy platform with valuable technical support available. However, this study also indicated that there is a need to provide scholarly recognition for the creation of online learning activities and services. This study revealed that Extension educators are more willing to accept online learning as part of their job description as long as the Course Management System was easy to learn, readily available to them and their audiences, with the technical support necessary to help them succeed. Findings indicated that there was a concern among Extension educators regarding the gap between the eXtension website and the Moodle™ Course Management System. The study also found that Extension educators see a definite need for online learning and that the eXtension community can continue to grow in the online education arena if eXtension further markets the concept and practice of the Moodle™ Course

Management System. Findings revealed that changing technology is unsettling, and that currently online education is not the preferred method of education in the Extension system. Further findings suggest that eXtension's sustained engagement and support will be a critical factor in the continued diffusion and adoption of online learning across Extension on a national scale.

Further analysis of the findings resulting from the two sets of interviews suggested that there is an overlap of themes found in Sample 1 interviews and Sample 2 interviews.

These themes were:

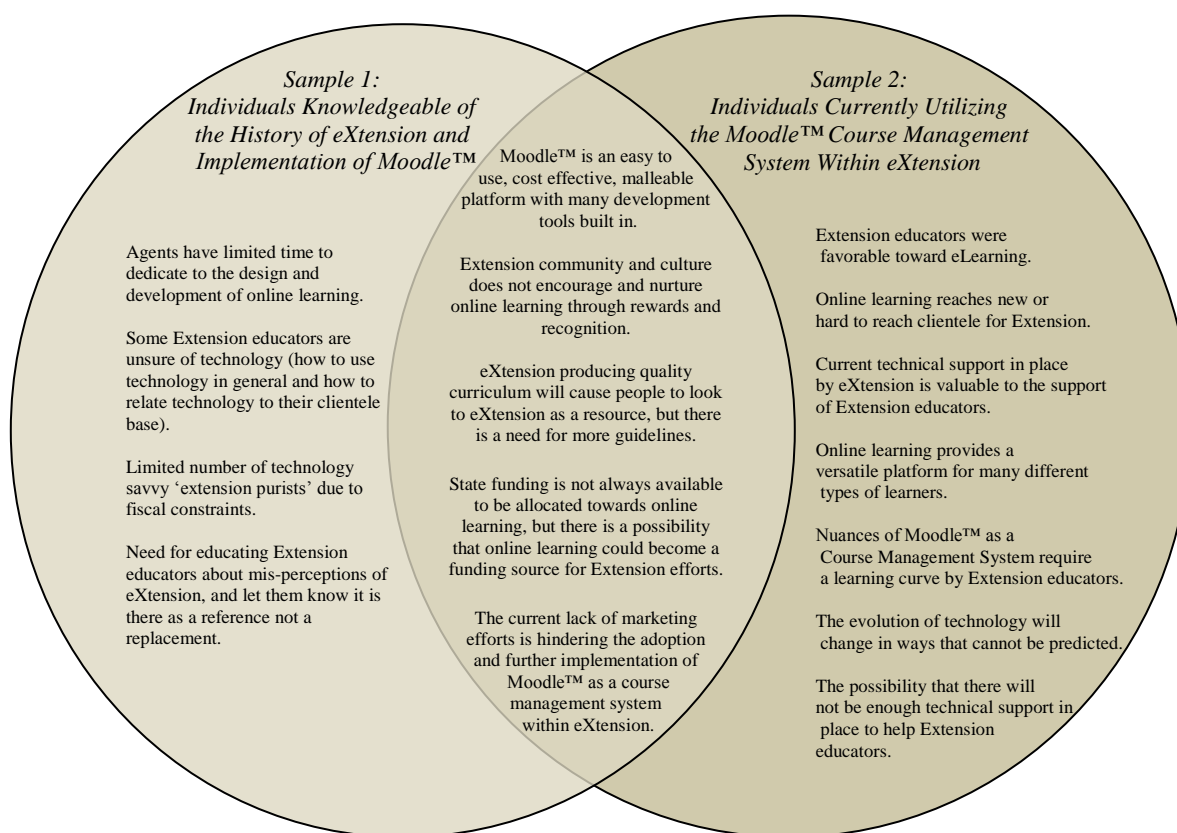
- Moodle™ is an easy to use, cost effective, malleable platform with many development tools built in.
- Extension community and culture does not encourage and nurture online learning through rewards and recognition.
- eXtension producing quality curriculum will cause people to look to eXtension as a resource, but there is a need for more guidelines.
- State funding is not always available to be allocated towards online learning, but there is a possibility that online learning could become a funding source for Extension efforts.
- The current lack of marketing efforts is hindering the adoption and further implementation of Moodle™ as a course management system within eXtension.

It is important to note that the two groups of individuals interviewed were not asked identical questions (See Appendix A & Appendix B). Interviews with Sample 1 were focused on the history and implementation of Moodle™ into eXtension while interviews with Sample

2 were focused on the strengths, weaknesses, opportunities and threats associated with Moodle™ from the standpoint of current instructors. Thus, the fact that five overlapping themes emerged from both groups reveals the importance of these particular themes. Figure 2 reveals a depiction of the overlapping themes identified by each sample interviewed.

Figure 2.

Diagram Depicting the Overlap of Themes Shared by Sample Groups Interviewed Regarding eXtension and the Strengths, Weaknesses, Opportunities and Threats Associated with Moodle™



The overlap of these themes is significant to the study because each group studied were asked different questions and their responses were from different perspectives (See Appendix A & Appendix B), however both groups shared similar interests, concerns and comments. Because it is obvious that both groups agree on these five themes, further research could be conducted based solely on the above themes to enhance and further promote the adoption and implementation of Moodle™ into eXtension.

Recommendations

Findings point to recommendations that could aid and lead to further implementation and adoption of the Moodle™ Course Management System. Based on the findings, it is recommended that further research be conducted in order to discover a way to incorporate online learning into job descriptions, job sharing across agencies, skill training and making online learning a recognized form of scholarship. Also, interviews with both sample groups revealed that eXtension should continue to support Extension educators in their eLearning efforts and possible research should be conducted to provide agencies with data that can support the use of technology to reduce costs. Individuals in both samples also expressed a concern for further marketing of the Moodle™ platforms via eXtension. It is recommended that eXtension place links to both online learning websites available to the public and Extension educators on their website that are obvious. It is also recommended that within those marketing efforts eXtension make clear to Extension educators that the eXtension network is there to help, not to replace. It is recommended that findings from the SWOT analysis be used as evidence to encourage further adoption of online learning. It is also recommended that further research be conducted regarding how Extension educators can reach online audiences and how to better identify audiences receptive to online learning.

Based on the findings of the study, further research could be conducted concerning the difference in the rate of adoption of the Extension Moodle™ websites between members of Communities of Practice (CoPs) and Extension educators in general. It is also recommended that further research be conducted concerning the overlapping barriers to adoption based on the existing samples used for each article in this study.

While it is recommended that further studies of formal online education within Extension be conducted, it is also recommended that informal forms of online education be researched. According to a 2005 research report in *The eLearning Guild* (Pulichino), a survey was conducted to discover how much people learn from formal verses informal learning. The results of that study confirmed that, "...80/20 rule when it comes to the balance between informal and formal learning" (Pulichino, 2005, p. 6). Therefore, encouraging research in areas such as social networking websites and online webinars as a medium for education is strongly recommended. eXtension has extended Extension's understanding of online learning and should continue to encourage further use of a variety of tools and technology for the promotion of bringing, "...the rewards of higher education into the lives of all segments of our extraordinary diverse population" (Rasmussen, 1989, p. 1).

REFERENCES

- Berg, B. L. (2009). *Qualitative research methods for the social sciences* (7th ed). Boston, MA: Pearson Education, Inc., publishing as Allyn & Bacon.
- Brunner, E., & Pao Yang, E.H. (1949). *Rural America and the extension service: A history and critique of the cooperative agricultural and home economics extension service*. NY: Bureau of Publications.
- Chavan, A., & Pavri, S. (2004). Open-source learning management with moodle. *Linux Journal*, Retrieved from <http://www.linuxjournal.com/article/7478>
- Cole, J., & Foster, H. (2008). *Using moodle: Teaching with the popular open source course management system* (2nd ed.). Sebastopol, CA: O'Reilly Media, Inc.
- Cresswell, J. W. (2008). *Educational research: Planning, conducting and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Dooley, K. E., Lindner, J. R., & Dooley, L. M. (2005). *Advanced methods in distance education: Applications and practices for educators, administrators and learners* (1st ed). Hershey, PA: Information Science Publishing.
- Edwards, M. C., McLucas, B. & Briers, G. E. (2004). Educational interest of extension agents: Implications for the delivery of educational programming at a distance. *Journal of Extension* [On-line], 42(1) Article 1FEA5. Available at: <http://www.joe.org/joe/2004february/a5.php>
- Erlandson, D. A., Harris, E. L., Skipper, B.L., & Allen S. D. (1993). *Doing naturalistic inquiry: A guide to methods*. Newbury Park, CA: Sage Publications, Inc.

- eXtension (2007). What is eXtension? [About page]. Retrieved from
<http://about.extension.org>
- Fraenkel, J. R. & Wallen, N. E. (2009). *How to design and evaluate research in education*.
New York, NY: McGraw-Hill.
- Goodstein, L.D., Nolan, T. M. & Pfeiffer, J. W. (1993). *Applied strategic planning: A
comprehensive guide*. New York, NY: McGraw-Hill.
- Harder, A. & Lindner, J. R. (2008). County extension agents' perceptions of eXtension.
Journal of Extension [On-line], 46(3) Article 3FEA2. Available at:
<http://www.joe.org/joe/2008june/a2.php>
- Holmes, B., & Gardner, J. (2006). *E-learning: Concepts and practice* (1st ed). Thousand
Oaks, CA: Sage Publications, Inc.
- Jackson, S. W., Hopper, G. M., & Clatterbuck, W. K. (2004). Developing a national web-
based learning center for natural resource education. *Journal of Extension* [On-line],
42(1) Article 1IAW1. Available at: <http://www.joe.org/joe/2004february/iw1.php>
- King, D. A., & Boehlje, M. D. (2000). Extension: On the brink of extinction or distinction?.
Journal of Extension [On-line], 38(5) Article 5COM1. Available at:
<http://www.joe.org/joe/2000october/comm1.php>
- Koch, S., Townsend, C. D., & Dooley K. E. (2005). A case study comparison between web-
based and traditional graduate level academic leadership instruction. *Journal of
Agricultural Education*, 46(4).
- Kotter, J. P. (1996). *Leading change*. Boston, MA: Harvard Business School Press.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage
Publications, Inc.

- Lippke, L. (2009). Personal Communication, June 1, 2009.
- Martín-Blas, T. & Serrano-Fernández, A. (2009). The role of new technologies in the learning process: Moodle as a teaching tool in physics. *Computers and Education*, (52)1, 35-44.
- Medved, E. (1966). Teaching by television. *Journal of Extension* [On-line], IV(1). Available at: <http://www.joe.org/joe/1966spring/1966-1-a5.pdf>
- Merriam, S. B. (1998). *Qualitative research and case study applications in education: Revised and expanded from case study research in education*. San Francisco, CA: Jossey-Bass.
- Moodle (2009). Welcome to the Moodle Community! [Home page]. Retrieved from <http://moodle.org>
- Morgan, G. (2003). Faculty use of course management systems. *Educause Center for Applied Research*. [On-line], Available at www.educause.edu/ecar/
- Murphrey, T. P., & Coppernoll, S. (2006). Facilitating the adoption of an online conferencing system – A recipe for success. *Journal of Extension* [On-line], 44(3) Article 3IAW1. Available at: <http://www.joe.org/joe/2006june/iw1.php>
- Northouse, P.G. (2007). *Leadership: Theory and practice* (4th ed.). Thousand Oaks, CA: Sage Publications.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed). Thousand Oaks, CA: Sage Publications.
- Pulichino, J. (2005). Current trends in e-learning research report. *The eLearning Guild*, March 2005 Retrieved from www.elearningguild.com

- Rasmussen, W.D. (1989). *Taking the university to the people: Seventy-five years of cooperative extension*. Ames, IA: Iowa State University Press.
- Rogers, E. M. (2003). *Diffusions of innovations* (5th ed.). New York, NY: Free Press a Division of Simon & Schuster, Inc.
- Romero, C., Ventura, S., & García, E. (2007). Data mining in course management systems: Moodle case study and tutorial. *Computers and Education* (51)1, 368-384.
- Senyurekli, A. R., Dworkin, J. & Dickinson, J. (2006) On-line professional development for extension educators, *Journal of Extension* [On-line], 44(3) Article 3RIB1. Available at: <http://www.joe.org/joe/2006june/rb1.php>
- Tennessen, D. J., PonTell, S., Romine, V. & Motheral, S.W. (1997) Opportunities for cooperative extension and local communities in the information age. *Journal of Extension* [On-line], 35(5) Article 5COM1. Available at: <http://www.joe.org/joe/1997october/comm1.php>
- Van Den Ban, A. W. & Hawkins, H. S. (1988). *Agricultural extension*. New York, NY: John Wiley & Sons, Inc.
- Waterhouse, S. (2005). *The power of elearning: The essential guide for teaching in the digital age*. Boston, MA: Pearson Education, Inc.
- Weller, M. (2007). *Virtual learning environments: Using, choosing and developing your VLE*. New York, NY: Routledge.
- Williamson, R. D. & Smoak E. P. (2005). Embracing edutainment with interactive e-learning tools. *Journal of Extension* [On-line], 43(5) Article 5IAW2. Available at: <http://www.joe.org/joe/2005october/iw2.php>

APPENDIX A

Interview Protocol for Sample 1

A Qualitative Examination of Early Adopters of Moodle™ in E-Extension (eXtension)

The following questions were asked to the first purposive sample, individuals knowledgeable of the development of eXtension and the implementation of Moodle™ in order to understand and describe the history of eXtension.

Personal Background and Opinion

1. How long have you worked for Cooperative Extension?
2. What is your opinion of online learning?
3. When do you think online learning became a vision of the future?

Historical Background

4. When did Cooperative Extension begin using online learning? Why?
5. Describe what eXtension is in your own words?
6. Was online learning being utilized before the development of eXtension? If so, how?
7. When and how was Moodle™ implemented into eXtension?
8. Would you explain the history of eXtension?
9. Where do you think eXtension is now?

APPENDIX B

Interview Protocol for Sample 2

A Qualitative Examination of Early Adopters of Moodle™ in E-Extension (eXtension)

The following questions were asked to the second purposive sample, ‘very active’ and ‘active’ course instructors utilizing Moodle™ websites to deliver online education. Very active was defined as individuals who had accessed at Moodle™ course recently and at least ten or more times between January and July of 2009. Active was defined as individuals who had logged in recently and at least three or more times between January and July of 2009. Activity levels were determined from individual activity reports from pdc.extension.org and campus.extension.org.

Personal Background and Opinion

1. Do you work for Cooperative Extension? If so, how long?
2. What is your opinion of online learning?

Moodle™

3. How did you learn of Moodle?
4. What made you start using Moodle as a means of online learning?
5. Would you explain your overall opinion of the Moodle online delivery system?

Strengths, Weaknesses, Opportunities and Threats

6. Would you describe what you like the most about Moodle as an online delivery system?
7. What would you consider to be the strengths of Moodle?
8. What would you consider to be the weaknesses of Moodle? In relation to other learning management systems? In general?
9. Do you think the system is easy, hard, confusing, etc.? Why?
10. Could you describe what you like the least about Moodle as an online delivery system?
11. In your own words, where do you think Moodle is going in terms of eXtension?
12. Do you see any potential opportunities for eXtension in regards to Moodle? If so, please elaborate.
13. Are you aware of other online course delivery systems? If so, do you foresee any of these systems taking over as the primary source of online learning in eXtension?
14. What are some potential threats to Moodle, in your opinion?

VITA

TAYLA ELISE HIGHTOWER

113 Scoates Hall, 2116 TAMU, College Station, Texas 77843-2116
 Phone (979) 845-3868 Email thightower@aged.tamu.edu

EDUCATION

M.S., Agricultural Leadership, Education and Communication

Graduation May 2010

Texas A&M University, College Station, Texas, Cumulative GPR 4.0

Thesis: "A Qualitative Examination of the History of E-Extension (eXtension), Implementation of Moodle™ (A Course Management System) and Associated Strengths, Weaknesses, Opportunities and Threats"

B.S., Agricultural Leadership and Development

Graduated May 2008

Texas A&M University, College Station, Texas, Cumulative GPR 3.189 Major GPR 3.8

PROFESSIONAL EXPERIENCE

Texas AgriLife Extension Service, College Station, Texas, June 2008 – present

eLearning Group – Graduate Assistant

- Work as a team to design, develop and implement online courses for Extension professional development and community outreach
- Direct national assistance for the eXtension Moodle learning management system
- Develop original learning assets by using various software systems for the enhancement of online curriculum
- Conduct research relevant to the growth and development of the Texas AgriLife eLearning group
- Organization of various online events, newsletters and online curriculum
- Conduct one-on-one program training sessions

Texas A&M University, College Station, Texas, January 2009 – present

Department of Agricultural Leadership, Education and Communication – Teaching Assistant

- Volunteer graduate teaching assistant
- Teach a supplemental course to undergraduate lecture to solidify theory and concept addressed in lecture
- Encouraged students in the acceleration of communication and writing skills