STUDENT AND INSTRUCTOR PERCEPTIONS OF

USING ATUTOR AS THE LEARNING CONTENT

MANAGEMENT SYSTEM FOR LEARNING AT

A DISTANCE IN THAILAND

By

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CHAPTER I

INTRODUCTION

Background and Setting

Global development is trending toward an information and knowledge-based

society that values increasing human resources via life-long education (Javis, 2007).

Learning processes have evolved with technological changes. In the information age,

electronic media plays an important role in the learning process by allowing for the

transfer of knowledge from the source such as university or institutes to the receiver such

as students. The emergence of the Internet has allowed for more convenient and rapid

methods of communication. The advancement of information and communication

technologies has had an immense impact on the educational system (Khan, 2007). The

use of the Internet in education systems makes learning and researching information

easier. Additionally, the widespread use of the Internet in educational settings allows for

online learning, or *electronic-learning* or *E-learning*, around the world.

Online courses have received widespread acceptance and continue to grow in

higher education settings (Hill, 2002; Song, Singleton, Hill, & Kho, 2004). The use of E-

learning in open and distance education is growing daily. In order to increase the

accessibility of education and effectiveness of online teaching and learning, educators are

implementing course development and delivery platforms to support e-learning courses

(Wright, 2006). A course development and delivery platform is also referred to as a content management system (CMS),virtual learning environment (VLE), learning management system (LMS), learning content management system (LCMS), or e-learning platform (Wright, 2006; Olla, 2007). It is an integrated and comprehensive software package that supports the development, delivery, administration, and evaluation of e-learning courses (Wright, 2006). This study focus on ATutor, which is an open source web-based learning content management system (LCMS) that used to develop and deliver online courses.

A course development and delivery platform used in educational system can be categorized in two types, proprietary software and open sources software (OSS). While many higher education institutions use proprietary software, such as Blackboard/WebCT, Desire2Learn, or eCollege, many institutions are choosing open source software such as ATutor, Moodle, or Sakai. Many higher education institutions have switched from proprietary to open-source software for the following reasons:

- the expense of an annual license to use the software,

- the inability of the user to access to the source code in order to make structural changes or add features,

- the software may not be current, and

- limitations of the license agreement.

In contrast, open-source software offers the following advantages:

- free redistribution,

- the freedom and ease of accessing the software source code to edit the system,

- flexible designs that can be adapted, modified, and redistributed for a wide

  range of instructional requirements, and

- the ease of adding or removing features to accommodate a variety of teaching

  and learning styles (Wright, 2006; Olla, 2007; Erlich & Aviv, 2000).

However, educators and learning institutions should select the software that aligns

with their specific educational plans to ensure successful implementation.

E-learning at Distance Education in Thailand

Thailand developed and adopted the "Master Plan for Information and

Communication Technology (ICT)," for use in educational settings between 2004 and 2006.

That plan highlighted the following four major strategies:

- the use of ICT to improve teaching and learning,

- the use of ICT to enhance the educational management and service

  effectiveness,

- personal training and development, and

- ICT equipment provision and distribution for all educational levels (Suktrisul,

  2006).

Thai Distance University (TDU) (a fictitious name to protect the privacy of the

research participants) employs a Distance Learning System that enables students to study by

themselves without having to enter a traditional classroom. Instruction is delivered through

the use of integrated media, which includes textbooks and workbooks and supplementary

media. The supplementary media include radio programs, television programs, satellite

programs, computer-assisted learning, audio and video on-demand, professional experience

activities, tutorials, online learning or e-learning, and e- tutorials. The majority of students are adults between the ages of 21 and 50 years old (Yenbamrung, Kuhakarn, Sumphunyuth, & Limungkoon, 2005).

Since students in open and distance learning are adults, Moore and Kearsley (1996) stated that it is important for distance educators to understand the characteristics of distance learners, what affects learner success, how learners perceive distance learning, and what learners expect from a distance learning program. Knowles (1970) postulated that adults prefer self-directed learning. Ryan (1999) also mentioned that "the academic contexts in which self-directed learning occurs have been described in terms of a continuum, which extends from formal teacher-oriented learning to completely learner-directed" (p. 5). Brookfield (2009) pointed out that "self-directedness in learning was a central element in Knowles' concept of andragogy-the art and science of helping adults to learn" (p. 2,615).

Additionally, Merriam (2001) also mentioned that andragogy and self-directed learning are two important pieces in the mosaic of adult learning theory (Merriam, 2001). Lynch (2001) found that seventy four percent of students enrolling in online courses indicate an increase in independent, self-directed learning. Understanding andragogy and self-directed learning will help distance educators better understand how adult learns in distance education and e-learning.

Statement of the Problem

 E-learning at Thai Distance University is in an early stage. The School of Agricultural Extension (a fictitious name to protect the privacy of the research participants) pioneered e-learning courses in four courses by using ATutor as the learning content

management system (LCMS) in 2005. These four courses are part of the TDU's Master of

Agriculture Program in Agricultural Extension. The use of ATutor is supplemental to web-

based instruction (WBI), and aims to help students as a study aid, increase interaction

between students and instructors, and enhance students' abilities to pursue knowledge from

various electronic sources. In addition, teachers are able to create and develop web-based

course content using ATutor. The program also allows instructors to interact with students

and track student performance electronically. Previously, TDU faculty relied exclusively on

print-based media for delivering distance courses.

In 2011, TDU will encourage instructors to use e-learning to supplement print-based

media in all courses using ATutor which is open source software as the LCMS platform.

Therefore, the most important questions for the TUD academic community including the

following:

- How do students and instructors perceive the ATutor interface?

- What makes a learner successful in e-learning environment?

- What factors create barriers to learning in an e-learning environment?

- What factors create motivation to learn in an e-learning environment?

- What are the strengths and weaknesses related to ATutor? and

- Does e-learning support or detract from self-directed learning?

The need for this study stems from the lack of research regarding students' and

instructors' perceptions of e-learning courses using open-source software at TDU. This

research is designed to help decision makers and instructors understand the best practices of

using ATutor as the LCMS for supplemental web-based instruction in open and distance

learning system (ODLS) at TDU.

It is important to identify the students' and instructors' perceptions of using ATutor as LCMS when delivering e-learning courses, and to outline the best practices for using a LCMS in open and distance learning. The results will be used to design effective tools for open and distance education in order to enhance student achievement in learning at TDU.

Purpose of the Study

The purpose of this study is to examine students' and instructors' perceptions of using ATutor as the LCMS in e-learning courses at TDU.

Research Questions

The following research questions guided this study:

1. What demographic variables were associated with students' and instructors' perceptions of using ATutor?

2. What were students' and instructors' perceptions of using ATutor as a LCMS? What did users perceive in terms of:

    1) Usefulness

    2) Ease of use

    3) Interaction and communication

    4) E-learning andragogical design

    5) Perception of online learning

    6) Self-directed learning

    7) Perception of teaching online by using ATutor

3. Was there a relationship between the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, self-directed learning and students' perceptions of using ATutor?

4. Was there a relationship between the usefulness, ease of use, interaction and communication, and teaching online by using ATutor and instructors' perceptions of using ATutor?

5. What were the perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU?

6. What features would users like to see added or removed from ATutor as an open source software product?

7. Did ATutor support or detract from self-directed learning?

8. What were students and instructors' suggestions for improving ATutor at TDU?

Definition of Terms/Operational Definitions

The terms used consistently in this study are as follows:

1. *Distance education.* Distance education (DE) in this research refers to the separation of the instructor and learner by geography and time (Bristol, 2005). Distance education can be facilitated by such tools as E-learning, radio programs, television programs, satellite programs, computer-assisted learning, and audio and video on-demand.

2. *Web-based instruction.* Web-based instruction (WBI) in this study refers to teaching and learning supported by the attributes and resources of the Internet (Khan, 1997).

3. *Supplemental Web-based instruction*. Supplemental WBI refers to the use of the use of WBI as a supplement to the distance learning system. For example, TDU has introduced ATutor as a supplement to enhance the efficiency of teaching and learning.

4. *ATutor*. ATutor is an Open-Source Web-based Learning Content Management System (LCMS) designed for accessibility and adaptability. Administrators can install or update ATutor in minutes, develop custom templates, and easily extend its functionality with feature modules. Educators can quickly assemble, package, and redistribute Web-based instructional content, easily retrieve and import prepackaged content, and conduct their courses online. Also, the program allows students to learn in an adaptive learning environment.

5. *Open-Source Software* (OSS) is software for which the source code is open and available, so that anyone can freely redistribute, analyze, and modify the program within certain limits.

6. *Technical support staffs*. Technical support staff in this study refers to the officers working in the Office of Educational Technology at TDU who work as instructional designers. Their responsibilities include designing the interface of ATutor courses.

Basic Assumptions of the Study

It is assumed that the respondents who volunteered to participate in this study would have completed at least one e-learning course. It was also assumed that the respondents to the questionnaire have no bias for or against the distance education system and that the respondents were representative of graduate students and instructors in open and distance

learning at Thai Distance University. This research study is grounded on the assumption that students' and instructors' perceptions play an important role in the vitality of e-learning in the open and distance learning system.

Significance of the Study

The use of e-learning in distance education is growing daily. It is important that the academic community understand how students and instructors perceive the ATutor interface as a LCMS. This research is designed to help decision makers and instructors understand the best practices of using open source software; ATutor as a LCMS for supplemental web-based instruction in open and distance learning.

Summary

In support of the ICT Master Plan, in 2004 Thai Distance University implemented an e-learning program and established a new strategy to become an e-university. In 2005, the university's School of Agricultural Extension pioneered e-learning in four graduate-level courses using ATutor as the LCMS. The use of ATutor as a supplemental WBI platform aims to help students as a study aid, increase interaction between students and instructors, and enhance students' abilities to pursue knowledge from various electronic sources. In addition, teachers are able to create and develop web-based course content using ATutor. The program also allows instructors to interact with students and track student performance electronically.

In the near future, TDU will encourage instructors to use e-learning to supplement print-based media in all courses using ATutor as the LCMS platform. Therefore, it is

important that the TDU academic community understands how students and instructors perceive the ATutor interface as a LCMS.

The need for this study stems from the lack of research regarding students' and instructors' perceptions of e-learning using open-source software at TDU. This research is designed to help decision makers understand the best practices of using ATutor as a LCMS for supplemental WBI in a distance learning system.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study is to examine students' and instructors' perceptions of using ATutor as LCMS while delivering e-learning courses.

In this chapter, the theoretical and conceptual frameworks for the study will be addressed. This review of literature is divided into the following sections: (a) Distance Education Background and Setting, (b) Managing E-learning in Distance Education, (c) Adult Learners in Distance Education, (d) Theoretical Framework, and (e) Summary of the Literature Review.

Distance Education Background and Setting

Definition of Distance Education

The definition of distance education.

The definitions of distance education are numerous and change as the concept evolves. The following terms are used to describe an education process in which the teacher and learners are physically separated: distance education, distance learning,

distance teaching, open learning, asynchronous learning, tele-learning, and flexible learning (Picciano, 2001). In the United States, the term *distance education* is commonly used interchangeably with *distance learning*, although some scholars prefer to use an exact definition for each term. For example, the Electronic Resource of Oxford Reference Online Premium provides the distinct definitions of "open learning" and "distance education" as follows: "Open learning is a system of learning based on independent study or initiative rather that formal classroom instruction" (Oxford Reference Online Premium, 2010 a, para. 1). "Distance education is a method of studying in which lectures are broadcast or conducted by correspondence, without the student needing to attend a school or college" (Oxford Reference Online Premium, 2010 b, para. 2).

Leading scholars in the field have provided the following classical definitions of distance education:

Holmberg (1989) proposed the definition of distance education as:

"a concept that covers the learning-teaching activities in the cognitive and/or psycho-motor and affective domains of an individual learner and supporting organization. It is characterized by non-contiguous communication and can be carried out anywhere and at any time, which makes it attractive to adults with professional and social commitments" (p.168).

Moore and Kearsley (1996) provided the following definition of distance education:

"Distance education is planned learning that normally occurs in a different place from teaching and as a result it requires special techniques of course design,

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special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements" (p. 2).

Mehrotra, Hollister, and McGahey (2001) explained that "distance education can be defined as any formal approach to instruction in which the majority of the instruction occurs while educator and learner are not in each other's physical presence" (p. 1).

Keegan (1996) proposed one of the most thorough definitions of distance learning that distance education as a form of education which can be characterized by five basic requirements:

"(1) the quasi-permanent separation of teacher and learner throughout the length of the learning process, (2) the influence of an educational organization both planning and preparation of learning materials and in the provision of student support services, (3) the use of technical media- printed, audio, video or computer- to unite teacher and learner and carry the content of the course, (4) the provision of two-way communication so that the student may benefit from or even initiate dialogue, (5) the quasi-permanent absence of learning group throughout the length of the learning process so that people are usually taught as individuals rather than in groups" (p. 50).

Garrison and Shale (1987) argued that Keegan's definition was narrow and did not flexible enough to allow for future changes and growth. They offered following three criteria essential for characterizing the distance education process:

"(1) distance education implies that the majority of educational communication between (among) teacher and student(s) occurs noncontiguously (2) distance

education must involve two way communication between (among) teacher and student(s) for the purpose of facilitating and supporting the educational process, and (3) distance education uses technology to mediate the necessary two-way communication" (p. 8).

Additionally, Srisa-an (1984) defined distance education as "a system where the students and teacher are at distance from one another, with little opportunity for face-to-face contact" (p. 4).

Definition of distance education as related to e-learning.

Ruhe and Zumbo (2009) described the difference between distance education, distance learning, and e-learning by providing definitions from many scholars. The earliest definition of distance learning was described by Bates. Bates (1995) explained that with distance learning, "students study at the time and place of their choice (home, work or learning center) and without face-to-face contact with a teacher" (p. 5). The second definition was described by Schlosser and Simonson (2006). They defined distance education as "institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors" (p. 1).

In contrast, Ruhe and Zumbo (2009) provides the definition of e-learning as "E-learning is an instructional program delivered online or through the internet. Include tutorials delivered on campus, workshops, short courses, and worksite-based instruction" (p. 2). Moreover Ruhe and Zumbo explained that e-learning is training delivered via the Internet to support individual or organizational performance goals. E-learning also

provides "in-process interactivity and cross student and even out of class communication" (p. 2).

Khan (2005) noted that "E-learning can be viewed as an innovative approach for delivering well designed, learner-centered, interactive, and facilitated learning environment to anyone, anyplace, anytime by utilizing the attributes and resources of various digital technologies along with other forms of learning materials suited for an open, flexible, and distributed leaning environment" (p. 3).

In this study, the researcher adopted the definition of distance education and e-learning from TDU. Distance education at TDU is defined as a system that employs correspondence media, radio broadcasts, television programs, satellite communications, and Internet, which enables students to study on their own without having to attend a conventional classroom. However, TDU defines e-learning as teaching and learning through computer media, including online and offline media that enables students to study by themselves and enhances interaction between learners and instructors and interaction among learners.

An Evolution of Distance Education

The evolution of distance education can be categorized into the following three generations, or stages (Moore & Kearsley, 1996).

1st Generation: *Correspondence/ Independent study.* The primary communication media in this generation, such as printed materials, study guides, and written essays or assignments are sent by mail. The correspondence courses are still the most popular form of distance education.

2nd Generation: *Open Universities and Broadcast/ Teleconferencing.* The second generation of distance education can be tracked to the early 1970s when the first Open University emerged. The open universities used a total systems approach for distance learning, including design and implementation courses. Besides relying heavily on correspondence instruction, the open universities also used broadcast and recording media such as radio programs, television programs, and audiotapes for communicating with students. In the later years of the second generation, universities delivered course materials by broadcast television or videotape with interaction conducted via telephone. The open universities also used telephone, satellite, cable, or the Integrated Service Digital Network (ISDN) lines for course delivery and interaction with students.

3rd Generation: *Networks/ Multimedia.* The third generation of distance education emerged in the 1990s. Distance instruction was based on computer conferencing networks and computer-based multimedia workstations.

Generations updated.

The delivery of distance education has changed significantly as technology has advanced. Lue, Bernard, and Abrami (2006) summarized the types of media used to deliver education into five generations as reviewed by two scholars as follows. The first scholar, Nipper (1989) categorized the types of media used to deliver distance education into the following three generations: 1st Generation, (G1): Distance education referred to the early days of print-based correspondence study, which is characterized by the establishment of the Open University in 1963. 2nd Generation, (G2): Distance education referred to the period when print materials were integrated with broadcast television and

radio, audio and videocassettes, and increased student support. 3rd Generation, (G3): Distance education was heralded by the invention of hypertext and the rise in the use of teleconferencing. The second scholar, Taylor (2001) added the 4th Generation, (G4), which is characterized by flexible learning such as computer-mediated communication (CMC) and Internet accessible courses. Fifth generation (G5), distance education included interactive multimedia online (web 2.0) and Internet-based access to online resources (as cited in Lue, Bernard, & Abrami, 2006, p.143).

Generation three to five describe the potential for distance education to move away from authoritarian and non-interactive courses to those involving a degree of student control and two-way communication, as well as group-oriented processes and greater flexibility in learning (Lue, Bernard, & Abrami, 2006).

Duffy and McDonal (2008) found that:

"from 1980- today, digital technologies provide communications via modem; multimedia instructional software on CD or networks makes distance instruction more robust; Internet and email make synchronous and asynchronous interactions possible and worldwide resources available; compressed video and audio make interaction just like being there" (p. 367).

The Theoretical Basis for Distance Education

A study of theories related to distance education provides a clearer understanding of common frameworks and perspectives. It is important to understand the fundamental theories in distance education because of their direct impact on the practice of the field.

The following theories form the basis of distance education: independence and autonomy (Wedemeyer 1981; and Moore 1972, 1993); interaction and communication (Moore 1996; Holmberg 1986; Hillman, Willis, and Gunawardena); and transactional distance (Moore and Kearsley 1996; Boyd, Apps, and associates 1980). Additionally, Merriam (2001) also mentioned that andragogy and self-directed learning are two important pieces in the mosaic of adult learning theory. For this study, the researcher used the theories of andragogy and self-directed learning as the theoretical framework which is later explained in the "Theoretical Framework" section (page 54-60).

Theories of independence and autonomy.

Two scholars proposed the theory of independent study and autonomy, Charles Wedemeyer and Michael Moore.

Wedemeyer (1981) proposed a system of 10 characteristics that provide instruction to the leaner by focusing on learner independence and adoption of technology. Such a system should provide the following: (1) learning can happen anyplace where the student is, learning can happen even if the student and teacher are not in the same place and same time, (2) that students have greater responsibilities for their learning, (3) free teachers from custodial duties that they have more time for educational duties, (4) university offer students more opportunities in courses, formats, and methodologies, (5) use appropriate teaching media and methods, (6) use mix media and method in each subject, (7) develop course that fit into an articulated media program, (8) maintain and increase opportunities to adaptation to individual differences, (9) evaluate student learning simply, and (10) allows students to start, stop, and learn at their own pace.

Additionally, Wedemeyer believed that distance education was more likely to be successful if distance educators develop relationships with their students. He suggested six characteristics of independent study systems including: (1) that teacher and student are separated, (2) that teaching and learning process commonly used written materials or other media, (3) that teaching is individualized, (4) that learning takes place through students' activities, (5) that design learning that students feel comfortable learning in their own environment,(6) that students take responsibilities for learning, with freedom to start and stop at any time (as cited in Simonson et al., 2003, p. 38-39).

Moore (1972) wrote about distance education in his work *Learner autonomy: the second dimension of independent learning*. He explained that distance education is composed of two elements: (1) provision for two-way communication (dialog); and (2) the extent to which a program is responsive to learner needs (structure). *Dialog* is "a term that helps us focus on the interplay of words, actions, and ideas and any other interactions between teacher and learner when one gives instruction and the other responds" (Moore & Kearsey, 2004, p. 224) and *structure* is a "set of variables that determine transaction distance are elements in the course's design" (Moore & Kearsley, 2004, p. 226).

In addition, Moore (1993) defined "learner autonomy" as "the extent to which the teaching/learning relationship, it is the learner, rather than the teacher, who determines the goals, the learning experiences, and evaluation decisions of the learning program" (p. 31). "Learner autonomy" describes distance learners' independence and ability to control their own learning, which ultimately affects their academic success. The level of autonomy required of the learner depends on the relationship between dialogue and

structure in the course, which in turn determines the level of transactional distance (Moore, 1993).

Moore classified distance education programs as "autonomous," or learner-determined, or "non-autonomous," or teacher-determined. The degree of autonomy can be gauged from the level of autonomy in setting objectives, methods of study, and evaluation. He also addressed "learner autonomy" that in distance education, the autonomous learners take responsibilities for their own learning and need little help from the teacher (as cited in Simonson et al., 2003, p.39).

Theory of interaction and communication.

Moore (2004) described three types of interaction in distance education, including learner-content interaction, learner-instructor interaction, and learner-learner interaction (Moore and Kearsley, 2004). Since Moore detailed those interactions, scholars have added several others. For example, Hillman, Willis, and Gunawardena added a fourth interaction referred to as "learners-interface interaction" (Lue, Bernard, & Abrami, 2006; Wiens, 2005).

Additionally, Holmberg's theory of distance education can be generally categorized as communication theory. Holmberg (1986) proposed the following seven assumptions from his theory: (1) the core of teaching is interaction between the teaching and learning parties, (2) emotions and feeling are involved in the study and contribute to learning pleasure, (3) learning pleasure supports student motivation, (4) student motivation occurred from involving in participate in decision making in study, (5) students' strong motivation help facilitates learning, (6) user friendliness and ease of

access to course contribute leaning pleasure and supporting student motivation will help to facilitate learning, and (7) students' learning of what has been taught demonstrated the effectiveness of teaching (Holmberg, 1986).

In 1995, Holmberg broadened his theory by adding an eighth assumption, which is that distance education serves learners who are heterogeneous and cannot or do not want to participate in face-to-face teaching (as cited in Simonson et al., 2003, p.42).

Theory of transactional distance.

Boyd, Apps, and associates (1980) developed their concept of transactional distance based on John Dewey's concept. They explained that transactional distance "connotes the interplay among the environment, the individuals, and the patterns of behaviors in a situation" (p. 5). In distance education, the transaction is "the interplay between people who are teachers and learners, in environments that have the special characteristic of being separate from one another, and a consequent set of special teaching and learning behavior" (Moore & Kearsley, 2004, p. 223-224). The transactional distance is high when the course is highly structured and teacher-learner dialog is nonexistent, such as in a recorded telecourse program. In contrast, the transactional distance is considered less when the correspondence course includes more dialog and less structure (Moore and Kearsley, 2004). The term *dialog* helps researchers to focus on the interplay of words, actions, ideas and other interactions between teachers and learners. The term *structure* helps researchers focus on the course's design, including learning objectives, content, activities, and assessment. (Moore & Kearsley, 2004)

Theoretical refinements.

In addition to the theories of distance education mentioned above, the basic concepts and theoretical foundations have been clarified and refined by several scholars, including Desmond Keegan, Randy Garrison, Doug Shale, and Myra Baynton. Keegan (1980) presented six elements essential for a comprehensive definition of distance education, including separation of teacher and student; influence of an educational organization especially in the planning and preparation of learning materials; use of technical media; provision of two-way communication; possibility of occasional seminars; and participation in the most industrialized form of education (Keegan, 1980).

Keegan also offered three hypotheses drawn from his theoretical framework: (1) distance students trend to drop out when they are not satisfied with the structures for the reintegration of the teaching acts; (2) if the structures for the reintegration of teaching acts are not satisfactory, distance students have a hard time achieving quality of learning; and (3) if the reintegration of teaching acts is not satisfactorily achieved, the status of learning at a distance may be questioned in institutions (Simonson et al., 2003).

The Distance Learning System at TDU, Thailand

Thai Distance University (TDU) (a fictitious name to protect the privacy of the research participants) adheres to the principle of lifelong education to further its mission. TDU has adopted the same distance learning system as used in the Open University of the United Kingdom (OUUK) by employing correspondence media, radio broadcasts, television programs, satellite communications, and Internet. This enables students to study by themselves without attending a conventional classroom

Instruction is given through the use of integrated media, including main and supplementary media. The main media are textbooks and workbooks. Textbooks contain course descriptions, course objectives, a title list of teaching units, study methods and a teaching plan for different units. Workbooks contain instructions, details of using teaching units, self evaluation before and after studying, exercises and reports, and tests for each unit. The supplementary media include radio, television, and satellite programs, as well as computer-assisted learning, audio and video on demand, online learning, professional experience activities, and tutorials. Each textbook and workbook is produced by a course team consisting of both faculties at TDU and outside specialists. The textbook and workbook is designed as a self-sufficient and self-learning package.

The university also uses a distance teaching system that employs a mixed-media approach. The media production process comprises five stages follows the "TDU PLAN". The first stage is the development of the distance teaching system, which includes identifying the educational needs of the target groups through a preliminary study and detailed feasibility study. The second stage is curriculum development. The third stage is selecting and producing the teaching media packages using five criteria (availability, accessibility, acceptability, validity, and economy) to form an integrated multimedia self-learning package for students. The fourth stage is establishing the delivery system in order to communicate knowledge to the students, including using traditional mail for printed material, radio and television for broadcast programs, Internet for e-learning and tutorial sessions at a local study center for face-to-face learning. The fifth stage includes evaluation and follow-up through final examinations and systematic evaluations (Sirisunyaluck, 1998; Sukhothai Thammathirat Open University, 2006).

A model for distance learning: a systems model for distance education.

Moore and Kearsley (2004, p. 14) proposed a systems model for distance education in order to explanation how a distance education system should look in practice. The model helps describe the main component process and elements of a distance education system. The following are components of the model

1) a source of knowledge,

2) courses, a subsystem that structure materials and activities for students,

3) delivery, another subsystem that delivers courses to students,

4) teacher, who interact with students as they use these materials for their learning,

5) learners, who have different environments,

6) a subsystem that monitors and evaluates outcomes,

7) an organization with policy and management structure in order to link these subsystem together.

The essential subsystems in distance education organization consist of content/knowledge, design, communications technologies, interaction, learning environment, and management. A systems model for distance education is helpful to better understanding the distance learning system at TDU.

Managing E-Learning in Distance Education

With the advance of Information and Communication Technologies (ICT), the Internet has become a powerful medium of learning and teaching at a distance. The following are several terms for online learning: e-learning; Web-based learning (WBL);

Web-based instruction (WBI); Web-based training (WBT); Internet-based training (IBT); distributed learning (DL); advanced distributed learning (ADL); distance learning (DL); and online learning (OL) (Khan, 2005).

E-Learning

E-learning components.

The following is a list of the most important e-learning components (Khan, 2005):

(1) Instructional design, such as learning and instructional theories, instructional strategies and techniques,

(2) Multimedia components, such as text and graphics, audio and video streaming, and links,

(3) Internet tools, such as communications tools (asynchronous, synchronous), remote access tools, internet navigation tools, search tools, and other tools,

(4) Computer and storage devices, such as computer platforms and computer devices,

(5) Connections and service providers, such as modems, dial-up, mobile technology, and application service providers,

(6) Authoring/ management programs, Enterprise Resource Planning (ERP) software, and standard, such as scripting languages, Learning Management System (LMS), and Learning Content Management System (LCMS),

(7) Server and related applications, such as HTTP server and Wireless Application Protocol.

E-learning features.

The e-learning program can provide a variety of features for learners. Those features are important for instructors and instruction designers to integrate into e-learning programs in order to help students achieve learning goals. The following are examples of e-learning features: ease of use; interactivity; multiple expertise; collaborative learning; authenticity; learner control; online support; course security; online evaluation; and online search (Khan, 2005).

Olla (2007) explained that the standard features of contemporary e-learning management systems include:

> "course scheduling and organization, student enrollment and administration, course content delivery capabilities, management of online class transactions, tracking and reporting of learner progress, assessment and measurement of outcome, reporting of achievement and completion, student records management, hosting capabilities, virtual classroom and live collaboration tools, and content assembly and authoring tools" (p. 642-643).

Web-Based Learning and Instruction

Web-based instruction (WBI).

Web-Based Instruction has caught the attention of higher education in a profound way. Khan (1997) defines Web-Based Instruction as: "...a hypermedia-based instructional program which utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported" (Smith, 2006 p.6).

Web-based learning and instructional design.

Online instructional designers and instructors need to prepare for a paradigm shift in pedagogy from teacher-centered to student-centered, and from highly structured to a flexible and constructive approach. Both instructional designers and instructors need to address the following apparently antithetical issues: "associative versus procedurally structured learning, collaborative versus independent learning, exploratory versus instructed learning, situated versus abstract learning, and formative versus summative assessment" (Wang & Gearhart, 2006, p. 8).

Instructional design for web-based instruction.

Wang and Gerahart (2006) noted that the general process for instructional design for WBI consists of need analysis, objective specification, development, implementation, and evaluation. The following are the most important attributes of a web-based learning environment that instructors and instructional designers should consider: "(1) hypermedia as the primary form of content delivery; (2) dynamic and interactive Web content; (3) worldwide resource sharing and communication; (4) asynchronous communication as the primary mode of class interaction; and (5) virtual collaborative learning" (Wang & Gearhart, 2006, p.15). The following are important areas that need to be considered when designing and developing web-based instruction: (1) need analysis. including institution readiness, faculty readiness, instructional materials readiness, and learner readiness; (2) hypermedia and constructive learning; (3) online communication and collaborative learning; (4) multimedia and interactive content; (5) worldwide resources

and lifelong learning; and (6) assessment in a web-based learning environment (Wang & Gearhart, 2006).

The review literature on web-based instruction help researcher emphasize on research question about e-learning androgogical design.

Leaning Content Management System (LCMS)

What is a Leaning Content Management System (LCMS)*?*

"Learning Content Management System" (LCMS) is frequently used interchangeably with the "Learning Management System" (LMS). In reality, the systems focus on different functions, but complement each other. The LCMS focuses on content as "it tackles the challenges of creating, reusing, managing, and delivering content," whereas LMS is focused on the learner and organization (Watson and Watson, 2007, p.30). The International Data Corporation (IDC) defines a Learning Content Management System as "a system that is used to create, store, assemble, and deliver personalized e-learning content in the form of learning objects" (Brennan, Funke, & Anderson, 2001, p.4). The American Society for Training & Development (ASTD) provides terms related to e-learning in its glossary homepage at http://www.astd.org/LC/glossary.htm. The ASTD defined Learning Content Management System (LCMS) as "A software application (or set of applications) that manages the creation, storage, use, and reuse of learning content. LCMSs often store content in granular forms such as learning objects" (para. 1).

E-learning platform.

The Open and Distance Learning (ODL) uses a variety of ICTs, such as e-mail, teleconferences, video conferences, and e-learning delivery platforms (ELDP). Many institutions use ELDP with their e-learning system to ensure that learning materials are delivered to students efficiently and effectively (Muthusamy & Fadzil, 2009).

Distance educators link course development and delivery platforms to the delivery of teaching and learning materials. In order to increase accessibility to educational opportunities, extend use of multimedia capabilities, and provide effective teaching management and learning experience (Wright, 2009).

ELDP, or delivery platforms, are also sometimes known as Integrated Learning Systems (ILS), Course Management Systems (CMS), Learning Management Systems (LMS), Integrated Course Management Systems (ICMS), or learning portals. They are integrated, comprehensive software packages that support course development, delivery, evaluation, and administration of online courses. The features of the software allow for both synchronous and asynchronous educational activities (Wright, 2009).

There are many ELDP providers in the proprietary software market today, including WebCT, Blackboard, Desire2Learn, and eCollege. Additionally, open-source software on the market includes Moodle, ATutor, or Sakai.

Furthermore, Graf and List (2002) provided the following subcategories for e-learning platforms:

1. *Communication tools* including: Forum, chat, mail/message, announcement, conferences, collaboration, synchronous and asynchronous tools;

2. *Learning objects* including: Test, learning materials, exercises, other creatable Los, importable Los;

3. *Management of user data* including: Tracking, statistics, identification of online users, personal user profile;

4. *Usability* including: User-friendliness, support, documentation, assistance;

5. *Adaptation* including: Adaptability, personalization, extensibility, adaptivity;

6. *Technical aspects* including: Standards, system requirements, security, scalability;

7. *Administration* including: User management, authorization management, installation of the platform;

8. *Course management* including: Administration of courses, assessment of tests, and organization of course objects (Graf & List, 2002).

The review literature on e-learning help researcher emphasize on research question about e-learning androgogical design and ATutor features.

The components of a Learning Content Managements System.

Leaning Content Managements System consists of all functions that enable the creation, description, importation or exportation of contents. Moreover it also consists of their reuse and sharing (Colace, Santo, & Vento, 2003). The following are core components of a LCMS: "(1) an authoring tool suitable for non-programmers; (2) a dynamic delivery interface that delivers content; (3) an administrative component that manages learner records, launches courses, and tracks progress; and (4) a learning object

repository that is a central database that houses and manages content" (Irlback & Mowat, 2009, p.8).

The successful and efficient development of a LCMS relies on effective development and use of learning objects. These consist of reusable, media-independent chunks of information organized by meta-data classification systems (Irlback and Mowat, 2009). A good LCMS should integrate the following functions:

(1) authoring and content-creation capacities,

(2) support for a broad sort of content formats,

(3) vigorous model for creating and managing learning objects,

(4) scalable object repository,

(5) good search and browse capabilities, personalize delivery content capabilities,

(6) ability to tracking and reporting (Oakes, 2002).

Additionally, Horton and Horton (2003) provided a list of needed capabilities that should be considered before choosing the appropriate LCMS. The LCMS should have the following functions:

- workflow management and productivity,

- adaptive learning,

- multiple forms of learning,

- learner's user interface,

- reuse of content,

- importing variety media format,

- importing objects and courses,

- exporting course,

- organizing course structure in simple,

- authoring in familiar tools,

- synchronous events,

- standards and regulatory compliance,

- consistent appearance,

- models and templates,

- cost,

- learning management capabilities,

- collaboration capabilities,

- virtual-school capabilities.

The review literature on learning content management system guided the

researcher to emphasize students' and instructors' perceptions of using ATutor as a

LCMS e-learning androgogical design.

Open Source Software in Distance Learning

What is open source software?

Erlich and Aviv (2007) described Open Source Software (OSS) as "software for

which the source code is open and available. Its licenses give users the freedom to access

and use the source code for any purpose, to adapt and modify it, and to redistribute the

original or the modified source code for further use, modification, and redistribution" (p.

195). Koohang and Harman (2005) wrote that "open source refers to software's source

code that is freely available to anyone who wishes to extend, modify, and improve the

code" (p. 77). The Free Software Foundation (2010) and the General Public License

(GNU) project provide the definition of free software on their website as "a matter of the

users' freedom to run, copy, distribute, study, change and improve the software" (para.

1).

In addition, the Open Source Initiative (OSI) (2010) provided the following

comprehensive definition of "open source" on its website http://www.opensource.org.

According to the site, open source doesn't just mean access to the source code, but the

distribution terms of open source software must comply with the following ten criteria: "

(1) free redistribution, (2) source code, (3) derived works, (4) integrity of the author's

source code, (5) no discrimination against person or group, (6) no discrimination against

fields of endeavor, (7) distribution of license, (8) license must not be specific to product,

(9) license must not restrict other software, and (10) license must be technology neutral"

(para.1).

Open source and e-learning.

In the past several years, higher education institutions have largely used

proprietary software applications as the platform for their e-learning courses. However,

open source software has attracted the attention of higher education institutions in recent

years and continues to grow and evolve. These e-learning applications have led many

schools to move away from proprietary software toward open source software (Erlich &

Aviv, 2007; Koohang & Harman, 2005). Coppola and Neelley (2004) detailed the

following reasons for the use of open source software in education:

"Tight budgets have focused attention on software acquisition costs and total

cost of ownership, Growing resentment of vendor power, particularly in the

wake of price increases and licensing changes that many institutions felt

powerless to reject, Lack of innovation. Learning technology has not lived up

to its potential to improve learning, … and some enablers of a more effective

model:

Collaboration technology has made large-scale collaborative work across

institutional, geographic, and cultural boundaries more effective, Software

design patterns, development technologies, and standards have evolved in a

way that facilitates modular, interoperable software components, Proven

business models and education focused companies that embrace open source,

Strong cultural appeal of open source in academia" (p. 5-6).

In addition, Coppola and Neelley (2004) outlined the following benefits of open

source software for open learning:

(1) software evolves more rapidly and organically,

(2) users' needs are rapidly met as the OSS model harnesses their collective

expertise and contribution,

(3) new versions are released very often and rely on the community of users

and developers to test it,

(4) team development is often largely volunteers, distributed, many in

numbers, and diverse,

(5) security is enhanced because the code is exposed to the world (Coppola &

Neelley (2004).

There are many open source projects and organizations devoted to helping

educators develop their e-learning courses, including A-Tutor (http://www.atutor.ca),

Sakai (http://www.sakaiproject.org), Claroline (http://www.claroline.net), and Moodle

(http://moodle.org).

The literature on open source software in distance learning guide the researcher to

emphasize on question about using open source software: ATutor in distance learning and

e-learning androgogical design.

ATutor: Brief Description and Features

ATutor brief description.

The Adaptive Technology Resource Centre (ATRC) at the University Of Toronto

developed and has maintained ATutor since its release in 2002. In its initial stage,

ATutor 1.0 was released as an open source Learning Content Management System. It

was published with SourceForge as its primary distribution network, and launched via

www.atutor.ca as its community website (Gay, 2010). Accessibility was the major focus

of ATutor's development from the beginning. Developers aimed for everyone to be able

to access the system, not only to learn via online, but also to function as an author,

instructor, or administrator of the e-learning environment. Since the initial release of

ATutor, it has continued to evolve, expanding its focus from its accessibility to its

conformance with interoperability standards, and its accommodation for small e-leaning

scenarios (Gay, 2010).

ATRC defined ATutor as "an Open Source Web-based Learning Content

Management System (LCMS/LMS) and social networking environment designed with

accessibility and adaptability in mind" (para. 1). Gay (2010) illustrated that "ATutor is

an open source, online learning environment used to develop Web-based courses, author

e-learning content, and present instructional materials on the Internet" (Gay, 2010).

      ATutor features.

      ATRC categorized the standard features in ATutor into the following four groups:

learners, instructors, administrators, and developers. The standard features for the

ATutor users from ATRC website are illustrated in Table 1.

Table 1

The standard features for the ATutor users

Learners	Instructors	Administrators	Developers
Accessibilities	Social networking	Module manager	Developer
Social networking	Instructor ATutor	Social networking	documentation
Security	handbook	Administrator's home	Networking
My course	Guest access to	page	gadgets
Inbox/messaging	courses	Patcher module	Module developer
Student profile	SCORMRun-time	Administrator ATutor	documentation
Adaptive navigation	environment &	handbook	Theme designer
Work groups	SCO manager	Multiple	documentation
File storage	Course tool	administrators	Hello world
Group blog	preferences	Pretty URLs	template module
Feedback	Course manage	Master student list	Patcher module
Preference setting	page	Themes manager	ATutor SVN code
Communication	Content usage	Automated installer	repository
tools	Work groups	and upgrade	ATutor bug
Export content	manager	General statistics	reports
Content tracker	Course tools	Secure course	
Test manager	File storage	content	
Glossary	Assignment drop box	Instructor request	
Link database	Content editor	User manager	
Course search	Visual editor	Enrollment manager	
TILE repository	Accessibility	Course manager	
search	checker	Backup manager	
	IMS QTI test export	Course utility	
	Interoperable	Course categories	
	content	Language manager	
	Reading list		
	Learning objects		
	repository		
	Backup manager		
	News &		
	announcements		
	File manager		
	Test manager		
	Polls		
	Forums		
	Course properties		
	Enrollment manager		
	Privileges		
	Add-on modules		

ATutor features at TDU.

In its initial e-learning development, TDU adopted ATutor 1.4.3 as its learning

content management system in September 2004. Since 2005, TDU adopted ATutor 1.5.4

for its e-learning courses. Important ATutor features that are primarily used in e-learning

courses at TDU are illustrated in Table 2.

Table 2

ATutor features used at TDU
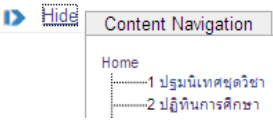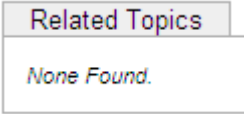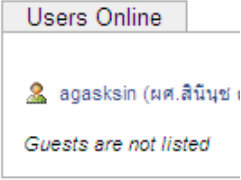
Symbolic	Features	Functional
	Content Navigation included course content	The content navigation of the course homepage appears in the side menu which located at the right corner. Learners can move through the content provided via ATutor using navigation, and can go back easily to the courses homepage by clicking "Home." The content navigation elements were displayed as text.
	Related Topics	Related topics located in the side menu, allowing learners to quickly jump to the topic. Related topics are cross-referenced, meaning the content page chosen to be related will also be related to the current page.
	Users Online	Learners can see who is currently online and can communicate with others using the "Users Online" tool.

Table 2 (Continued)

ATutor features used at TDU

Symbolic	Features	Functional
	Forums	Forums appear in the main navigation of the course home page. Forum is one of the communication tools of ATutor that allows learners and instructors to communicate in a structured manner through messages.
	Chat	Chat is one of the communication tools of ATutor that allows learners and instructors to communicate synchronously. The course members need to have an appointment for chat.
	Glossary	The instructors provided lists all course terms, its definitions and related terms that useful for the learners.
	TILE Repository Search	The Inclusive Learning Exchange (TILE) Repository Search allow learners to search for content related to the topics they are studying and download content packages for studying offline.
	Links	Links allow instructors and learners to visit course related information from external websites. Both instructors and learners can add links by using Suggest Link.
	Tests & Surveys	Instructors can create tests and surveys with a variety of questions, such as multiple choice, true/false, or matching. Learners can take tests, review the results, and keep track of their scores.

Table 2 (Continued)

ATutor features used at TDU
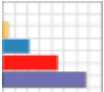
Symbolic	Features	Functional
	Site-map	Site Map displays all course content. Learners can click the topics provided on the site map in order to access the topics that they are interested in.
	Export Content	Learners can export course content as SCORM 1.2 content package. Exported content package is archived in to a single file using ZIP compression that can be viewed offline.
	My Tracker	My Tracker allows learners to keep track of the content pages they have visited.
	Polls	Polls are useful for quickly gathering student opinions regarding instructors' questions.
	Directory	Directory is useful for learners and instructors to find each other. The information provided consists of a list of course members' names, status, online status, website, pictures, and telephone numbers.
	Frequently Asked Question (FAQ)	The FAQ section allows instructors to compile lists of frequently asked questions (and answers) for learners.

Table 2 (Continued)

ATutor features used at TDU

Symbolic	Features	Functional
	Group	Instructors can assign learners to groups within various projects. Learners can collaborate with others on course projects. Group members can communicate with each other through the forums, blog, and share resources using file storage.
	Reading List	The reading list section allows instructors to list course resources related to course topics such as books, articles, and URLs.
	File Storage	Learners have their own file storage utility. They can upload, download, and storage files on the ATutor system. They also can share files across groups or an entire course.
	Blogs	Instructors can assign learners or groups to manage their own blog in order to share their experiences.
	ACollab	ACollab area allows learners in each group to work together on course projects.
	Announcements	Instructors can announce dates or important information in the announcements section, which appears on the first page of the course homepage.

The literature on ATutor features helped the researcher to emphasize on question about students' and instructors' perceptions of using ATutor as a LCMS and e-learning androgogical design.

Designing the Effective Online Course

Effectiveness of e-learning in distance education system.

The study on the effectiveness of online teaching and learning is on-going. The research provides useful criteria to determine the effectiveness of e-learning. Filimban (2008) explained that effective teachers in online courses should contribute expert course design and delivery, perform appropriate assessments, and encourage collaboration. Additionally, they should provide students the opportunity to master their learning, gain experience with technology, and demonstrate and apply critical thinking skills in real-world situations. Furthermore, Thomson and Irele explained that the term "effectiveness" usually refers to learning outcomes and participant satisfaction (Moore and Anderson, 2003).

The criteria of effectiveness of e-learning.

Moore and Kearsley (2004) summarized the following variables that determine the effectiveness of distance education courses:

(1) number of student at learning site

(2) class length

(3) students' reason for taking class

(4) students' educational background

(5) instructional strategies

(6) kind of learning involved

(7) type of pacing

(8) amount and type of interaction

(9) instructor's role

(10) preparation and experience of instructors and administrators

(11) learner support.

Filimban (2008) provided the following six criteria for effective online learning courses based on critical pedagogy:

(1) instructional design and delivery

(2) student learning outcomes

(3) assessments

(4) student empowerment

(5) social presence

(6) critical thinking skills

(7) alignment.

The literature on designing the effective online course helped the researcher to emphasize on research question about e-learning androgogical design.

Factors Related to Users' Perception of E-Learning

The literature offers many studies that focus on student perception, learning and satisfaction with the course or with technology. In most cases, satisfaction and learning are significantly correlated (Alvarez, 2005). Simonson and associates noted that "research related to learners' perception has focus on identifying factors related to satisfaction, attitude, and perceived learning and interaction" (Simonson et al., 2003, p. 67). For example, Richardson and Swan (as cited in Alvarez, 2005) reported a significant correlation between student satisfaction with their instructors and their perceived learning

online. Simmons (2006) found from a review of literature that students' perceptions of a Web-based Learning Environment seem to be related to learning, and that a student's learning style had a moderate effect on performance in training sessions, which influenced the satisfaction level of the student.

In this study, the researcher focused on students' and instructors' perceptions of e-learning courses. Researchers have detailed the following students' and instructors' perceptions of e-learning courses.

Learner characteristics.

Bolliger (2004) reported that the factors contributing to student satisfaction are student characteristics, including social life, academic integration, institutional fit, quality and usefulness of education, and difficulty of the program.

Eom and Wen (2006) explained that students are the primary participants of e-learning systems. A different learning strategy, called self-regulated learning, is necessary for e-learning systems.

Suanpang and Petocz (2006) described students' characteristics to include attributes such as background (gender, age, educational background, religion, family income and hometown), learning style, motivation and prior knowledge.

Based on the literature review, the researcher found that there are some learner characteristics that affect students' satisfaction of online courses, including social life, academic integration, learning style, self-regulation, background, and motivation.

Instructor characteristics.

Bolliger (2004) found that the instructor is the main predictor in course satisfaction. Student satisfaction is highly correlated with the performance of the instructors, especially in relation to instructor availability and response time. However, the instructor's feedback is the most important factor influencing satisfaction of the course. For example, instructor characteristics including: timely feedback on assignment, availability, and flexibility if students have questions.

Eom and Wen (2006) explained that in a distance learning system, the supportiveness of the instructor was helpful to the learner. The instructor's role becomes a facilitator who stimulates, guides, motivates, and challenges the student in an e-learning environment.

Based on the literature review, instructor characteristics, including performance and feedback, are influential to students' satisfaction with a course.

Interaction characteristics.

Moore (1996) described following three types of interaction in distance education that play an important role in students learning:

(1) Learner-content interaction, which refers to learners interacting with the information of the course. In an online learning environment, the learners read or listen to the information on a computer to acquire knowledge.

(2) Learner-instructor interaction, which refers to learners interacting with the instructor. In distance education environments, learner-instructor interaction may

be through synchronous communication (telephone, videoconferencing and chat),

or asynchronous communication (correspondence, e-mail and discussion boards).

In addition, the learners and instructors may use face-to-face interaction.

(3) Learner-learner interaction, which refers to interaction among learners. This

interaction occurs synchronously (through videoconferencing or chatting) or

asynchronously (through discussion boards, chat, e-mail or face-to-face

interaction) (Moore and Kearsley, 2004).

Since Moore, some scholars have added several other types or interactions. For

example, Hillman, Willis, and Gunawardena added a fourth type of interaction referred

to as

(4) Learners-interface interaction, which describes the interaction between

learner and distance learning technology (Lue, Bernard &Abrami, 2006; Wiens,

2005).

Oleks (2004) found that "field-dependent learners" favor communication with

peers and instructors. Online interaction, including the use of e-mail and chat rooms, is a

critical element for the field-dependent student. Wiens (2005) found that "student

satisfaction is influenced by prompt interaction and familiarity with the instructor" (p.

30).

Content characteristics.

Bolliger (2004) explained that good course web sites should present information

in a logical order and their design must be attractive and consistent. Text must be easy to

read, downloading times should be short, and pages should not be too cluttered with information.

Eom and Wen (2006) wrote that course structure is a crucial factor that affects the success of distance education along interaction. The course structure expresses educational objectives, teaching strategies, evaluation methods, and the extent to which an educational program can accommodate learners' needs. Course structure includes two elements: course objectives and course infrastructure.

A review of the literature found that course structure, including objectives and infrastructure, affects students' satisfaction of online courses.

System operations and technology characteristics.

Bolliger (2004) explained that course management, including technical support, toll-free numbers, textbooks and libraries are important for distance learners. Navigational components are also important in online environment. Learners should be able to move within the course web site without getting lost. Also, external links should be provided so students can access necessary information.

Based on the literature review, system operation characteristics, such as technical support and course navigation have an affect on the satisfaction of online learning.

The review literature on factors related to users' perception of e-learning helped the researcher to emphasize research question about students' and instructors' perceptions of using ATutor as a LCMS and independent variables (constructs).

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Adult Learners in Distance Education

Adult Learners and Adult Education

Adult learners.

Adult learners are the majority students in distance education and in this study adult learners are population of the study. For ease of understanding, the researcher will first focus on the definition of *adult* followed by the definition of *adult education*. Knowles (1980) proposed the following two criteria to define *adult*. First, an *adult* is a person who performs certain social roles, such as worker, spouse, parent, and responsible citizen. Second, an *adult* is a person who perceives themselves to be essentially responsible for their own life (Knowles, 1980). An increasing number of adults have returned to academia to study both full-time and part-time while they are working or homemaking. Thus, an understanding of adult learning is important for adult educators.

Adult education and adult learning.

Knowles (1980) stated that adult education is hard to picture because it involves all sorts of people, has no set curriculum, and is sometimes referred to as staff development, in-service education, continuing education, and lifelong education. Knowles provides the following three different meanings to define adult education:

1. Adult education is the process of adult learning. It includes the process that adults use for self-development, and the educational process that they use in combination with production process, political process, and service process.

2. Adult education is described as a set of organized activities that institutions use to accomplish a specific educational objective. There are many activities to engage adults, such as organized classes, study groups, lecture series, guide discussions, conferences, workshops, and correspondence courses.

3. Adult education combines all process and activities into the idea of a movement or field of social practice. Adult education brings together all the individuals, institutions, and associations into a discrete social system with education for adults in order to increase opportunities for adult learners (Knowles, 1980).

In addition, Merriam (1993) illustrated that adult learning could be distinguished from learning in childhood, and adults can learn as well as young people (Merriam, 1993). Adult educators attempt to understand adult learning and continue to pursue codifying adult learning as a set of principles, models, or theories.

Principles and Assumptions about Adult Learning

Gibb (1960) described the following six principles for adult learning:

(1) learning must be problem-centered,

(2) learning must be experience-centered,

(3) experience must be meaningful to the learner,

(4) the learner must be free to look at the experience,

(5) the goals must be set and search organized by the learner,

(6) the learner must have feedback about progress toward goals (Gibb, 1960).

Lindeman (1926) provided the following five assumptions about adult learners:

(1) adult learners are motivated to learn when the learning meets their

experiences, needs, and interests that learning will satisfy,

(2) orientation to learning for adult learners is life-centered,

(3) experience is a great source for adult learning,

(4) adult learners have a profound need to be self-directing,

(5) individual differences among adult learners increase with age, thus adult

education should provide for differences in style, time, place, and pace of

learning (Knowles, Holton, and Swanson, 1998).

In addition, Knowles (1980) identified the following five assumptions for all adult

learners in all learning contexts:

(1) adult learners move from dependency towards expanding self-

directedness,

(2) adult learners who have much experience become better learning because

they have rich source for learning,

(3) adult learners are motivated to learn in order to meet satisfaction with real

life problems,

(4) adult learners are concerned about enhancing their potential and

application of knowledge,

(5) adult learners prefer to participate in activities that engage performance-

centered learning (Knowles, 1980).

Moreover, Mackeracher (2004) proposed the following seven assumptions about

adult learners:

(1) adults can and do learn throughout their lifetime,

(2) adults are not mature children,

(3) adults change over time,

(4) adults accumulate experiences and prior learning over their lifetime,

(5) the role of time in adult daily life is significant in the learning process,

(6) the sense of self that adults bring to a learning process might arise in

learning interactions,

(7) how adults prefer to learn contributed from self-directedness and

relatedness (Mackeracher, 2004).

Factors Affecting Student Success in Distance Education

Moore and Kearsley (2004) summarized previous scholars' perspectives of

factors affecting students in distance education: That summary includes the following:

(1) educational background,

(2) personal characteristics and learning style,

(3) extracurricular concerns such as work, family, health, and social interest,

(4) academic concerns such as perception of relevance of content, difficulty of

the course, student support, media used, interaction, feedback, and pace of

learning (Moore and Keaesley, 2004).

Simonson et al. (2003) proposed four indicators of successful learning at distance,

including learners' attitude and motivation to participate in distance learning, student

experience with the distance course, students' cognitive abilities, and learning styles

(Simonson et al., 2003).

Adult learners' characteristics are important for success in distance learning. Skager (1979) suggested that self-directed learners should have the following seven characteristics:

"(1) self-acceptance, or positive views about the self as a learner based on successful prior experiences,

(2) planfulness, or the capacity to (a) diagnose one's own needs, (b) set appropriate goals, and (c) select or devise effective learning strategies to accomplish these goals,

(3) intrinsic motivation, or willingness to persist in learning in the absence of immediate external rewards or punishments,

(4) internalized evaluation, or the ability to apply evidence, whether derived from personal observations or offered by external agents, to the qualitative regulation of one's own learning activity,

(5) openness to experience, or willingness to engage in new activities because of curiosity or similar motives,

(6) flexibility, or willingness to explore new avenues of learning, and

(7) autonomy, or the ability to choose learning goal and means that may be seen as unimportant or even undesirables within an immediate social context". (p. 519)

Furthermore, Cercone (2008) presented the following 13 recommendations for online course development based on characteristics of adult learners:

(1) adults may have some limitations that should be considered in the design of online learning,

(2) adult learning styles should be considered,

(3) adults need to be actively involved in the learning process,

(4) adults need scaffolding to be provided by instructor,

(5) adults have pre-existing learning history and need support to work in the new learner-centered concept,

(6) adults need an instructor acting as a facilitator,

(7) adults need consideration of their prior experience,

(8) adults need to see the link between what they learn and how it can apply to their lives,

(9) adults need to feel that learning focuses on issues directly their need,

(10) adults need to test their learning as they go along,

(11) adults learning climate required collaborative, respectful, mutual and informal,

(12) adults need to self-reflect on learning process,

(13) adults need dialogue and social interaction (Cercone, 2008).

The review literature on adult learner in distance education help researcher emphasize on research question about the students' demographic variables and self-directed learning.

Theoretical Framework

Distance education assumes that learners at a distance should have the ability to be self-directed learners. In order to increase the effectiveness of leaning, distance educators should incorporate andragogy in the design and delivery of course content (Richards, Dooley, & Lindner, 2004). The following two foundational theories are considered pillars of adult learning: andragogy and self-directed learning (Merriam, 2001).

Andragogy

Knowles (1980) explained that andragogy, in the European concept, means "the art and science of helping adults learn" (p. 43). In contrast, pedagogy refers to "the art and science of teaching children" (p. 43). According to Knowles, andragogy is based on the following five assumptions of adult learners regarding:

1. *The concept of the learner.* In adulthood, concepts move from dependency toward increasing self-direction;

2. *The role of the learners' experience.* Adults accumulate a growing reservoir of experience, which is an increasingly rich resource for learning;

3. *Readiness to learn.* Adults become ready to learn when they experience a need to learn in order to perform social role more effectively;

4. *Orientation to learn.* Adults are more performance-centered, problem-centered, life-centered and task-centered, rather than subject-centered in

learning. Thus, adults learn in order to be able to apply knowledge and skills

they gain to achieve their full potential in life (Knowles, 1980);

5. *Motivation to learn.* Adults are motivated to learn by internal motivators such

as self-esteem, recognition and self-actualization, rather than external

motivations, such as a reward (Knowles and associates, 1984).

In his later work, Knowles (1990) noted: "The andragogical model, as I see it, is

not an ideology; it is a system of alternative sets of assumptions…The andragogical

model is a system of assumptions which includes the pedagogical assumption" (p. 64).

Knowles, Holton, and Swanson offered *Andragogy in Practice* as a new

systematic approach to apply andragogy across multiple domains of adult learning

practices.

The following principals of andragogy in practice include:

1. *Goal and purposes for learning.* There are three critical elements to

understanding andragogy in practice, including individual, institutional

and social growths;

2. *Individual and situational differences.* There are three categories of

variables that impact adult learning, including individual learner

differences, subject matter differences, and situational differences;

3. *Andragogy.* Andragogy core adult learning principles or six andragogical

principles including, learner's need to know, self-concept of the learner,

prior experience of the learner, readiness to learn, orientation to learning,

and motivation to learn (Knowles, Holton, & Swanson, 2005, p. 4).

Self-Directed Learning

   The original work on self-directed learning.

   The concept of Self-Directed Learning (SDL) has received attention from many adult educators (Caffarella, 1993; Merriam and Caffarella ,1999). The early models of SDL had been proposed by scholars such as Houle (1961), Rogers (1969), Knowles (1970, 1975), and Tough (1971). Houle (1961) established the concept that adult learning needs to be concerned with SDL. Since people originally started to think that it might be interesting to deal with learning desires or processes. Rogers (1969) proposed that the outline of self-directed learning concept that 'nondirective' approach attended by mighty trust in the individual to learn and learn how to learn. Knowles (1970) applied Rogers' SDL concept to his andragogy approach to facilitate learning in adult education (Garrison, 2003).

   Then, Tough (1971) proposed the first comprehensive description of SDL as a form of learning by using "self-planned learning." Knowles' (1975) proposed the following six steps of SDL: "(1) climate setting; (2) diagnosing learning needs; (3) formulation of learning goals; (4) identifying human material resources for learning; (5) choosing and implementing appropriate learning strategies; and (6) evaluating learning outcomes" (Merriam and Caffarella, 1999, p. 295).

   Knowles (1975) broadly described SDL when he noted that it is " a process in which the individual takes initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes" (p. 18).

According to Merriam and Cafferella (1999), self-directed learning has the following three goals: "(1) to enhance the ability of adult learners to be self-directed in their learning; (2) to foster transformational learning as central to self-directed learning; and (3) to promote emancipatory learning and social action as an integral part of self-directed learning" (p. 290).

Based on the pioneering work of these scholars, SDL is viewed as a process of learning in which people focus on planning, carrying out and evaluating their own learning experiences. This view has received much attention in the literature.

Teaching the self-directed learner.

In his work on andragogy, Knowles (1983) provided useful six suggestions that he considered to be the art and science on how to help adults learn. According to Knowles, the tutor should:

(1) provide a physical climate showing that the learner is accepted, respected, and supported,

(2) pay attention to self-diagnosis of need for learning,

(3) involve the leaner in planning a personal program based on this self diagnosis,

(4) act as a resource person, a procedural specialist, and a co-inquirer, and does not try to force the other person to learn,

(5) help the learner in a process of self evaluation,

(6) emphasize the techniques that tap the experience of adult learners.

Lowry (1989) summarized points from many scholars such as Bauer, Brookfield, and Hiemstra regarding on how adult educators and educational institutions / employers can best facilitate self-directed learning.

Adult educators can best facilitate self-directed learning as follows:

- inspire adult learners to view knowledge and truth as contextual, to see value frameworks as cultural constructs, and to appreciate that they can act on their world individually,

- create a partnership with the learner to set goals, strategies, and evaluation criteria by using negotiating a learning contract,

- be a facilitator of the learning experience rather than lecturer,

- encourage adult leaner to set objectives that can be met in a variety of ways,

- encourage critical thinking skills by using activities such as seminars

- offer alternative options for evidence of successful performance

- create openness and a trusting atmosphere to promote better performers.

Educational institutions and employers can best facilitate self-directed learning as follows:

- offer opportunities for self-directed learners to reflect on what they are learning,

- procure the necessary tools to assess learners' current performance and to evaluate their expected performance

- assist learning networks, study circles, and learning exchanges (Lowry, 1989).

Self-directed learning in distance education.

The concept of independence and autonomy is preoccupied in distance education. Thus, the scholars in the field interested to study on SDL. There is much research on SDL in distance education. For example, Moore (1983, 1996) offered the theory of transactional distance that focuses on the following two dimensions: (1) distance teaching, consisting of individualization or structure and dialogue; and (2) autonomy. Autonomy is concerned with the degree of control that the students have over preparation, execution and evaluation of their learning. Moore treated "autonomy as a personality characteristic combined with self-directedness and personal responsibility (Garrison, 2003, p. 162).

The review literature on theoretical framework help researcher emphasize on research question about adult learners and students' demographics that related to learning at distance.

Summary of the literature review

Distance Education Background and Setting

The definitions of distance education are numerous and change as the concept evolves. In this study, the researcher adopts the definition of distance education as a system that employs correspondence media, radio broadcasts, television programs, satellite communications, and Internet, which enables students to study on their own without having to attend a conventional classroom.

The evolution of distance education can be categorized into the following three generations, including 1st Generation: *Correspondence/ Independent study,* 2nd Generation: *Open Universities and Broadcast/ Teleconferencing,* and 3rd Generation: *Networks/ Multimedia* (Moore & Kearsley, 1996)..

The following theories form the basis of distance education: independence and autonomy (Wedemeyer 1981; and Moore 1972, 1993); interaction and communication (Moore 1996; Holmberg 1986; Hillman, Willis, and Gunawardena); and transactional distance (Moore and Kearsley 1996; Boyd, Apps, and associates 1980). Additionally, Merriam (2001) also mentioned that andragogy and self-directed learning are two important pieces in the mosaic of adult learning theory.

Managing E-Learning in Distance Education

The e-learning program can provide a variety of features for learners. Those features are important for instructors and instruction designers to integrate into e-learning programs in order to help students achieve learning goals.

The following are important areas that need to be considered when designing and developing web-based instruction: (1) need analysis, (2) hypermedia and constructive learning, (3) online communication and collaborative learning, (4) multimedia and interactive content, (5) worldwide resources and lifelong learning, and (6) assessment in a web-based learning environment.

E-learning delivery platforms (ELDP) are integrated, comprehensive software packages that support course development, delivery, evaluation, and administration of online courses. There are many ELDP providers in the proprietary software market

today, including WebCT, Blackboard, Desire2Learn, and eCollege. Additionally, open-source software on the market includes Moodle, ATutor, or Sakai. Open source software has attracted the attention of higher education institutions in recent years and continues to grow and evolve.

The literature offers many factors related to students' and instructors' perception of e-leaning courses including: learner characteristics, instructor characteristics, interaction characteristics, content characteristics, and system operations and technology characteristics.

Adult Learners in Distance Education

Adult learners are the majority students in distance education. Knowles (1980) identified the following five assumptions for all adult learners in all learning contexts: (1) adult learners move from dependency towards expanding self-directedness, (2) adult learners who have much experience become better learning because they have rich source for learning, (3) adult learners are motivated to learn in order to meet satisfaction with real life problems, (4) adult learners are concerned about enhancing their potential and application of knowledge, (5) adult learners prefer to participate in activities that engage performance-centered learning (Knowles, 1980). Adult learners' characteristics are important for success in distance learning.

Theoretical Framework

The following two foundational theories are considered pillars of adult learning: andragogy and self-directed learning (Merriam, 2001).

Andragogy.

Andragogy core adult learning principles or six andragogical principles including, learner's need to know, self-concept of the learner, prior experience of the learner, readiness to learn, orientation to learning, and motivation to learn (Knowles, Holton, & Swanson, 2005).

Self-Directed Learning.

The concept of Self-Directed Learning (SDL) has received attention from many adult educators. Tough (1971) proposed the first comprehensive description of SDL as a form of learning by using "self-planned learning". Knowles (1975) broadly described SDL when he noted that it is " a process in which the individual takes initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes". Based on the pioneering work of these scholars, SDL is viewed as a process of learning in which people focus on planning, carrying out and evaluating their own learning experiences.

It is clear from the literature reviewed in this chapter that a number of important variables affect students' and instructors' perception of using ATutor. Previous research has illustrated the determinants that affect students' and instructors' perceptions of using ATutor, including learner, instructor, technology, content, and interaction characteristics, and e-learning andragogical design.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to examine students' and instructors' perceptions of using ATutor as the LCMS in delivering e-learning courses at a distance in Thailand. The following research questions guided the study:

1. What demographic variables were associated with students' and instructors' perceptions of using ATutor?

2. What were students' and instructors' perceptions of using ATutor as a LCMS? What did users perceive in terms of:

    1) Usefulness

    2) Ease of use

    3) Interaction and communication

    4) E-learning andragogical design

    5) Perception of online learning

    6) Self-Directed Learning

    7) Perception of teaching online by using ATutor

3. Was there a relationship between the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, self-directed learning and students' perceptions of using ATutor?

4. Was there a relationship between the usefulness, ease of use, interaction and communication, and teaching online by using ATutor and instructors' perceptions of using ATutor?

5. What were the perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU?

6. What features would users like to see added or removed from ATutor as an open source software product?

7. Did ATutor support or detract from self-directed learning?

8. What were students and instructors' suggestions for improving ATutor at TDU?

This chapter discusses the research design and methodology for this study. It includes information about Institutional Review Board approval, the research design, constructs, subject selection methods, instrument development, and data collection and analysis procedures.

Institutional Review Board (IRB)

Oklahoma State University (OSU) policy and federal regulations require prior review and approval of all research studies involving human subjects before researchers begin an investigation. The Office of University Research Services Institutional Review Board (IRB) of Oklahoma State University conducted a review of this study in order to

protect the right and welfare of human subjects involved in biomedical and behavioral research.

The following code was assigned to this study by the Institutional Review Board: AG0942. A copy of the IRB approval notification is presented in Appendix A.

To protect the privacy of the research participants the researcher implemented the following procedures.

1. Used a fictitious name for the university as TDU and a fictitious name for the school as the school of Agricultural Extension.

2. Clustered the data together and removed all identifying information, reporting results in the aggregate format.

3. Kept the completed questionnaires in a locked cabinet at the advisor's office at 466 Ag. Hall for one year. Only the researcher able to access the data.

4. Did not store data on a networked computer.

Research Design

This study featured a triangulation mixed-methods design combining both quantitative and qualitative methods (Creswell, 2008). Creswell and Clark (2007) defined mixed methods research as:

"a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phase in the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data

in a single study or series of studies. Its central premise is that the use of

quantitative and qualitative approaches in combination provides a better

understanding of research problems than either approach alone" (p.5).

The researcher implemented quantitative and qualitative methods simultaneously

with equal weight for each data set during the study (Creswell & Clark, 2007).

Triangulation refers to the comparison of data collected and analyzed from each method,

followed by the determination of whether the different data sets support or contradict

each other (see Figure 1). Data for this study was collected primarily through instructor

and student questionnaires and focus group interviews. The mixed methods data

collection helped the researcher gain a deeper understanding of the focus of research

interest and the participants' perceptions of using ATutor in open and distance learning

while increasing the validity of the study (Figure 2).

This approach was chosen for this study due to several advantages each method

provides for the clearest understanding of the research problem. The quantitative

measures provided descriptive data for generalizability, while the qualitative measures

provided a richness of detail about students' and instructors' perceptions.
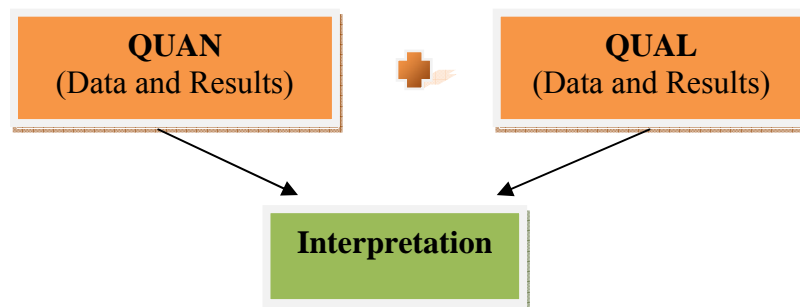
Figure 1. Triangulation Mixed Methods Designs (Creswell, 2008, p. 557)

The Focus of Research Interest

A-Tutor® Now	**Students' and instructors' perceptions of using A-Tutor® as the LCMS**	**A-Tutor® Then** *Best practices for using LCMS at distance*

I_1, I_2

I_3

I_4

Instructor

Learners

I_1: Learner-Content Interaction
I_2: Learner-Interface Interaction
I_3: Learner-Instructor Interaction
I_4: Learner-Learner Interaction
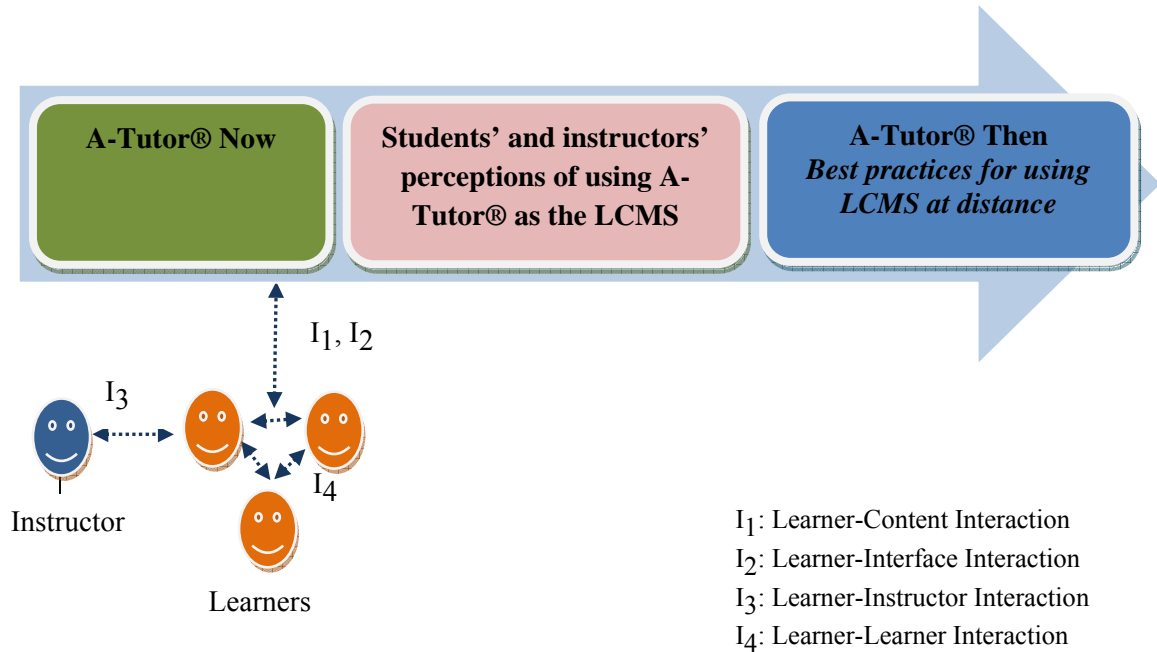
Figure 2. The focus of research interest

Subject Selection

Population

The target population for this study was a census all graduate students and instructors of Thai Distance University's School of Agricultural Extension, Master of Agriculture Program in Agricultural Extension. All research participants were solicited to participate in the study by the researcher during an intensive seminar, professional experience enrichment workshop, and graduate commencement ceremony preparation day. A census was used, therefore, no sampling was required. There were 222 students and 10 instructors.

Survey Method.

1. Student participants. Student participants included graduate students in TDU's Master of Agriculture Program in Agricultural Extension who were enrolled in the second semester 2009 (December-April), and students who graduated in April and October 2009 (see Table 3).

Table 3

Group of students who participated in survey

Group	Academic Year	Number of students
Cohort1	Current Master's program, first year, 2010	57 students
Cohort 2	Current Master's program, second year, 2010	86 students
Cohort 3	Completed Master's program, 2009	79 students
Total		222 Students

2. Instructor participants. Instructor participants included the 10 TDU School of Agricultural Extension instructors who taught courses using ATutor during the 2009 school year.

All members of the identified population were given the opportunity to complete the survey questionnaire.

Focus group interview.

1. Student participants. The researcher conducted focus group interviews with a group of students from each region during an intensive seminar, professional experience

enrichment workshop, and graduate commencement ceremony preparation day. Three

groups represented each cohort with five students in each group (see Table 4.).

Table 4

Group of students who participated in focus group interview

Group	Academic Year	Number of students
Cohort1	Current Master's program, first year, 2010	5 students
Cohort 2	Current Master's program, second year, 2010	5 students
Cohort 3	Completed Master's program, 2009	5 students
Total		15 students

2. Instructor participants. The researcher conducted focus group interviews with

four TDU instructors who taught online courses using ATutor.

Instrumentation

Procedural Development and Instrument Selection

The researcher developed two survey questionnaires and two focus group

interview outlines for this study: student survey (see Appendix D); instructor survey (see

Appendix E); student focus group interview outline (see Appendix F); and instructor

focus group interview outline (see Appendix G). The instruments were carefully

developed and adapted from validated surveys found in the literature (see Table 5.).

Table 5

Summarization of the pertinent literature related with measure

Dimensions	Pertinent literature related with measure
A. Student survey questionnaire	
1. Learner characteristics	Douglas, 2004; Picciano, 2002; Stewart,
a. student's background	2005; Talvitie-Siple, 2007; Wang, 2003a
b. student's learning strategies	
c. level of courses participation	
d. familiarity with technology	
e. level of engagement	
f. reasons for accessing ATutor	
g. self-directed learning	
2. Technology characteristics	Douglas, 2004; Lee, 2001; Wang, 2003a;
a. ATutor features	Wang, 2003b
b. ease of use	
c. usefulness	
d. system operation characteristics	
3. Interaction characteristics	Douglas, 2004; Lee, 2001; Talvitie-Siple,
a. learner-content interaction (I_1)	2007; Wang, 2003b
b. learner-interface interaction (I_2)	
c. learner-instructor interaction (I_3)	
d. learner-learner interaction (I_4).	
4. E-learning andragogical design	Angulo & Bruce, 1999; Filimban, 2008;
a. connectivity	Lee, 2001 Wang, 2003a; Wang, 2009
b. accessibility issues	
c. flexibility	
d. designed of e-learning courses	
e. interactivity	
f. immediate and autonomous assessment	
g. collaboration via online discussion tools	
h. extended opportunities,	
i. classroom learning reinforcement and motivation	
j. learning satisfaction	
5. Student perception of online learning	Lee, 2001; Young, 2004
a. usefulness	
b. contribution to professional growth	
c. value of learning activities	

Table 5 (Continued)

Summarization of the pertinent literature related with measure

Dimensions	Pertinent literature related with measure
6. Self-directed learning; the ability to set:	Guglielmino, 1999; Tsay, 1999
a. an individual pace for learning,	
b. a study plan	
c. appropriate criteria for learning	
assessment.	
B. Instructor survey questionnaire	
1. Teacher characteristics	Sanders, 2009; Talvitie-Siple, 2007; Wang,
a. instructor's background	2003a
b. level of courses participation	
c. familiarity with technology	
2. Technology characteristics	Douglas, 2004; Sanders, 2009; Wang,
a. ATutor features	2003a
b. ease of use	
c. usefulness	
d. system operation characteristics.	
3. Interaction characteristics	Douglas, 2004; Sanders, 2009; Talvitie-
a. instructor-learner interaction	Siple, 2007
b. instructor-interface interaction	
c. learner collaboration.	
4. Benefits of and barriers to using	Sanders, 2009
ATutor	
a. monetary support	
b. expenses	
c. technical support	
d. tenure and promotion	
e. flexible time.	

Student survey.

The survey instrument was divided into eight parts. The first part of the

instrument (Items 1-13) was used to gather learner characteristics information. The

second part of the instrument contained questions regarding technology characteristics.

Respondents were asked to indicate (using a Likert-type rating scale where na = never

use this feature, 1 = strongly disagree or not at all useful, and 10 = strongly agree or very

useful) the extent to which they agree or disagree with the usefulness (Items1-22), ease of

use and system operation characteristics (Items 1-8). The respondents were also asked to

rank the importance of ATutor features, including those they would like added to or

removed from the program, and what they most and least like about ATutor (Items 3-7).

The third part of the instrument (Items 1-9) included questions regarding

interaction characteristics. The fourth part of the survey (Items 1-20) contained questions

regarding e-learning andragogical design. The fifth part of the survey (Items 1-9)

contained questions regarding student perceptions of online learning. The sixth part of

the survey (Item 1-6) contained questions regarding student self-directed learning.

Respondents were asked to indicate whether they agree or disagree with provided

statements according to those characteristics or dimensions.

The seventh part of the survey was developed to provide any comments or

feedback for improving the use of ATutor as a web-based supplemental instruction tool.

The final part of the survey (Items 1-6) was used to gather demographic information of

respondents.

Instructor survey.

The survey was divided into five parts. The first part of the survey (Items 1-24)

was used to gather instructor demographic and characteristics information. The second

part of instrument contained questions regarding technology characteristics. Here

respondents were asked to indicate (using a Likert-type rating scale where na = never use

this feature, 1 = strongly disagree or not at all useful, and 10 = strongly agree or very

useful) the extent to which they agree or disagree with the usefulness (Items 1-22), ease

of use and system operation characteristics (Items 1-8). The respondents were also asked

to rank the importance of ATutor features, including those they would like added to or

removed from the program, and what they most and least like about ATutor (Items 3-7).

The third part of the survey (Items 1-5) contained questions regarding interaction

characteristics. The fourth part of the survey (Items 1-15) contained questions regarding

using ATutor. The final part of the survey was developed to provide any comments or

feedback for improving the use of ATutor as a web-based supplemental instruction tool.

Student focus group interview questions outline.

The outline of student focus group interview questions regarded the following:

- problems accessing ATutor;

- how ATutor affected instructor-student interaction;

- how ATutor affected student learning;

- what type of media students prefered;

- which features of ATutor students found most and least helpful;

- what features students would like to see added or removed from ATutor;

- opinions about using ATutor to deliver online courses; and

- comments or feedback about using ATutor.

Instructor focus group interview questions outline.

The outline of instructor focus group interview questions regarded the following:

- benefits and barriers of using ATutor;

- how ATutor affected teaching methods;

- problems regarding the implementation of, or teaching while, using ATutor;

- what features instructors would like to see added to or removed from ATutor;

- opinions about using ATutor to deliver online courses; and

- comments or feedback about using ATutor.

Validity and Reliability

The process of enhancing the validity and reliability of the instrument included carefully developed and adapted survey questions from validated surveys found in the literature (see Table 6), an expert panel to examine the questionnaires and focus group outlines, and a pilot test using Cronbach's alpha to measure reliability. Questions were edited when necessary.

The panel of experts consisted of four Oklahoma State University faculty members with expertise in agricultural education and education technology. The expert panel examined the content, construct, and face validity of the survey questionnaires and focus group interview outlines.

A pilot test of the student survey was conducted with 30 graduate students majoring in TDU's School of Agricultural Business who were enrolled in the second semester 2009 (December-April). These students were not included in the population for this study. The pilot test was conducted in December 2009. All thirty surveys were completed. The researcher used Statistical Package for the Social Science (SPSS) Student Version 16.0 for Windows, to run Cronbach's alpha on scaled items to determine the reliability of the instrument and to check for internal consistency (Creswell, 2006).

The reliability alpha coefficient for all 74 items on the student survey was 0.95 (α = 0.05). The reliability alpha coefficient for each section of the student survey was determined as follows: usefulness of ATutor features (22 items = 0.99), ease of use and system operation characteristics (8 items = 0.48), interaction characteristics (9 items = 0.96), E-learning andragogical design (20 items = 0.96), student perception of online learning (9 items = 0.97), and student self-directed learning (6 items = 0.85). When the researcher deleted the fifth item regarding the ease of use and value of system operation characteristics, the new reliability alpha coefficient for this section increased to 0.91 (see Table 6).

Table 6

The reliability alpha coefficient of student survey (N=30)

Constructs	Number of Item	Alpha Coefficient	Alpha Coefficient if Item Deleted
1. Usefulness of ATutor features	22	0.99	-
2. Ease of use and system operation characteristics	8	0.48	0.91
3. Interaction characteristics	9	0.96	-
4. E-learning andragogical design	20	0.96	-
5. Student perception of online learning	9	0.97	-
6. Student self-directed learning	6	0.85	-
All Items	74	0.99	-

Note. (α = 0.05).

The researcher did not perform the pilot test for the instructor survey due to the limited number of instructors who taught online courses during the 2009 semester. However, the researcher performed a reliability test of the instructor instrument by using the returned questionnaires from 10 instructors who participated in this study. The reliability alpha coefficient for all items (50 items) of the instructor survey was 0.94 (α =

0.05). The reliability alpha coefficient for each dimensions of the instructor survey was

presented as follows: usefulness of ATutor features (22 items = 0.90), ease of use and

system operation characteristics (8 items = 0.91), interaction characteristics (5 items =

0.98), and using ATutor (15 items = 0.93) (see Table 7).

Table 7

The reliability alpha coefficient of instructor survey (N=10)

Constructs	Number of Item	Alpha Coefficient	Alpha Coefficient if Item Deleted
1. Usefulness of ATutor features	22	0.90	-
2. Ease of use and system operation characteristics	8	0.91	-
3. Interaction characteristics	5	0.98	-
4. Teaching online by using ATutor	15	0.93	-
All Items	50	0.94	-

Note. (α = 0.05).

A perfect reliability test would have a reliability coefficient of 1.00 (Gay, Mills, &

Airasian, 2006). According to Tuckman, most measurements in the social and behavioral

sciences should have a Cronbach's Alpha of at least 0.6 or 0.7, and preferably closer to

0.9 to be considered a reliable measurement (Tuckman, 1999). The pilot study indicated

the range of Cronbach's Alpha between 0.85-0.99, suggesting the measurements are a

highly reliable test.

Data Collection Procedures

Triangulation for this study was accomplished through collecting the following data sources: student surveys; instructor surveys; student focus group interviews; and instructor focus group interviews.

Survey Administration

The researcher developed a survey instrument package that included the following: a cover letter (see Appendix C) explaining the purpose of the study; and a survey instrument for students or instructors. The survey instruments were delivered to the respondents as follows:

Students.

The researcher delivered 199 survey instrument packages to a group of student respondents during an intensive seminar, professional experience enrichment workshop, and graduate commencement ceremony preparation day. The researcher distributed the survey instrument package and collected it on schedule (see Table 8). The researcher received 199 completed survey instruments from the student participants.

Absent students.

The researcher delivered 23 survey instrument packages via mail to potential student respondents who were absent during the three interactive activities. The researcher sent the potential student respondents the survey instrument package with a postage paid return envelope in order to increase the response rate. A follow-up package

was sent two weeks later to non-respondents as suggested by Dillman's (2007) tailored design survey method. However, only eight of the potential student participants who were mailed surveys returned the instruments. Of 222 students, 207 completed the survey for a response rate of 93.24 percent.

Instructors.

The researcher delivered 10 survey instrument packages to instructors during a faculty meeting day. The researcher distributed the survey instrument package and collected it on schedule (see Table 8). The researcher received 10 completed surveys instruments from the instructor participants. The response rate was 100 percent.

Table 8

Survey Administration Timeline

Date	Population Group	Activities
January 9, 2010	Cohort#1	1. Provided an introduction to the study and asked for participation in the study 2. Answered student questions 3. Delivered survey packages
January 10, 2010	Cohort#1	1. Collected completed survey instruments
January 14, 2010	Cohort#3	1. Provided an introduction to the study and asked for participation in the study 2. Answered student questions 3. Delivered survey instrument packages 4. Collected completed survey instruments

Table 8 (Continued)

Survey Administration Timeline

Date	Population Group	Activities
January 19, 2010	Instructor	1. Provided an introduction to the study and asked for participation in the study 2. Answered instructor questions 3. Delivered survey instrument packages
January 22, 2010	Cohort#2	1. Provided an introduction to the study and asked for participation in the study 2. Answered student questions 3. Delivered survey instrument packages
January 23, 2010	Cohort#2	1. Collected completed survey instruments
January 26, 2010	Instructor	1. Collected completed survey instruments

Focus Group Interview Administration

The researcher and a research assistant conducted focus group interviews with students and instructors as follows:

Students.

The researcher conducted focus group interviews with a group of students from each cohort during the intensive seminar, professional experience enrichment workshop, and graduate commencement ceremony preparation day. There were three groups representing each cohort and five students in each group (see Table 9).

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Instructors.

The researcher conducted focus group interviews with four TDU instructors who taught online courses using A-Tutor.

Table 9

Focus Group Interview Administration Timeline

Date	Population Group	Activities
January 9, 2010	Cohort#1	1. Provided an introduction to the study 2. Answered student questions 3. Distributed the participant informed consent (see Appendix B) 4. Performed focus group interviews
January 13, 2010	Cohort#3	1. Provided an introduction to the study 2. Answered student questions 3. Distributed the participant informed consent (see Appendix B) 4. Performed focus group interviews
January 22, 2010	Cohort#2	1. Provided an introduction to the study 2. Answered student questions 5. Distributed the participant informed consent (see Appendix B) 3. Performed focus group interview
January 22, 2010	Instructor	1. Provided an introduction to the study 2. Answered instructor questions 6. Distributed the participant informed consent (see Appendix B) 3. Performed focus group interview

Data Analyses Procedures

Both the quantitative and qualitative data were triangulated, interpreted, and analyzed to determine whether the different data sets support or contradict each other.

Quantitative Data

The data were analyzed with the use of the Statistical Package for the Social Science (SPSS) Student Version 16.0 for Windows. Descriptive statistics such as mean, mode, median, and standard deviations were used to calculate demographic variables and students' and instructors' perceptions on the selected constructs. The Pearson Product Moment Correlation Coefficient was used to examine the relationship between demographic variables and selected constructs.

The following guidelines on strength of relationship were used to interpret the strength of relation between variables (constructs).

r = 0 to 0.30 or 0 to -0.30   indicate a weak relationship

r = 0.31 to 0.70 or -0.31 to -0.70   indicate a moderate relationship

r = 0.71 to 1or -0.7 to -1   indicate a strong relationship (Ratner, 2010)

Qualitative Data

The data from open-ended survey questions and the focus group interviews was organized using Microsoft Office Excel. The analysis of qualitative data utilized analytic circles, rather than a fixed linear approach. The analytic circle is represented in a spiral image called "the data analysis spiral" including data managing, reading/memoing, describing, classifying, interpreting and representing, and visualizing (Creswell, 2007). Both the qualitative and quantitative data sets were organized, analyzed, and reported following Hennink's process of data analysis for focus group research as follows (Hennink, 2007, p. 210-233):

Stage 1: *Data preparation*. Data analysis in this stage involves transcribing the discussion, translating transcripts, cleaning / labeling and anonymous data.

Stage 2: *Identifying themes in the data*. Data analysis in this stage involves identifying themes.

Stage3: *Labeling data by themes*. Data analysis in this stage involves indexing the entire data set using the themes as labels or coding data.

Stage 4: *Using the framework for analysis*. Data analysis in this stage involves descriptive analysis, and synthesis of the findings.

Summary

The study on "Student and Instructor Perceptions of Using A-Tutor® as the Learning Content Management System for Learning at a Distance in Thailand" used triangulation mixed-methods design combining both quantitative and qualitative methods (Creswell, 2005). Original surveys instruments were carefully developed and adapted from validated surveys found in the literature.

The surveys were reviewed by a panel of experts and pilot tested. The population of the study consisted of 222 graduate students and 10 instructors from Thai Distance University, School of Agricultural Extension, Master of Agriculture Program in Agricultural Extension.

The researcher collected data from multiple sources and methods. Both the quantitative and qualitative data were triangulated, interpreted, and analyzed to determine whether the different data sets support or contradict each other. Findings are reported in aggregate in Chapter IV.

CHAPTER IV

FINDINGS

Introduction

This chapter focuses on the findings of this study. The purpose of this study was to examine students and instructors perceptions of using ATutor as LCMS when delivering e-learning courses at a distance in Thailand. The following research questions were used to guide the study:

1. What demographic variables were associated with students' and instructors'perceptions of using ATutor?

2. What were students' and instructors' perceptions of using ATutor as a LCMS?

   What did users perceive in terms of:

   1) Usefulness

   2) Ease of use

   3) Interaction and communication

   4) E-learning andragogical design

   5) Perception of online learning

   6) Self-Directed Learning

   7) Using ATutor

3. Was there a relationship between the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, self-directed learning and students' perceptions of using ATutor?

4. Was there a relationship between the usefulness, ease of use, interaction and communication, and teaching online by using ATutor and instructors' perceptions of using ATutor?

5. What were the perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU?

6. What features would users like to see added or removed from ATutor as an open source software product?

7. Did ATutor support or detract from self-directed learning?

8. What were students and instructors' suggestions for improving ATutor at TDU?

Population

The population for survey method included all graduate students and instructors from School of Agricultural Extension, Thailand Distance University (TDU). There were 222 graduate students and 10 instructors.

The population for focus group interviews included 15 graduate students and 4 instructors.

Response Rate

The data collection period was from January 9, 2010, to February 24, 2010, for a total collection time of seven weeks. There were 207 students and 10 instructors who

responded surveys. Of 222 students, 207 completed the survey for a response rate of

93.24 percent. For instructors, the response rate was 100 percent.

The response rate for focus group interviews was 100 percent for both students

and instructor group.

Findings Related to Research Question 1

Research question one sought to determine what demographic variables were

associated with student and instructors' perceptions of using ATutor?

Quantitative Findings

1. Students' characteristics and demographics.

Students' characteristics.

Students' characteristics are presented in Table 10. In this study, 51.7% of all

respondents who completed the questionnaire were female. The participants' age ranged

from 24-62 years. The largest percentage of students were between the ages 41-50

(34.8%) followed closely by the 21-30 age group (29.0%). Almost fifty percent of

respondents indicated that they were single (49.8%), while 48.3% were married. Fifty-

eight percent of participants indicated that they had no children. About three-fourth of

respondents (76.8%) indicated that they were government officers and 71.7% of them

work in knowledge worker positions. Most respondents were part-time students (99.5%).

Table 10

Students' Characteristics (N=207)

Constructs	*f*	%
1. Gender		
Male	100	48.3
Female	107	51.7
2. Age		
21-30 years	60	29.0
31-40 years	59	28.5
41-50 years	72	34.8
51-60 years	15	7.2
61-70 years	1	0.5
3.Marital Status		
Single	103	49.8
Married	100	48.3
Other	4	1.9
4. Number of children		
None	120	58.0
1 child	30	14.5
2 children	44	21.3
3 children	13	6.3
5. Employment status*		
5.1 Government officers		
Managerial positions	43	20.8
Knowledge worker positions	114	55.1
General positions	2	1.0
5.2 Business employee		
Managerial positions	7	3.4
Knowledge worker positions	10	4.8
General positions	3	1.4
5.3 Business owner	5	2.4
5.4 Farmers	5	2.4
5.5 Student	1	0.5
5.6 Other	17	8.2
6. Learning Status		
Part-time student	206	99.5
Full-time student	1	0.5

* 1. Managerial positions such as Director, Provincial Agricultural Extension Officer, and Chief of Division or Sub-Division.
  2. Knowledge worker positions such as Agricultural Research Officer, Subject Matter Specialist, Agricultural Extensionist, Agricultural Officer, and Irrigation Engineer.
  3. General positions such as General Administrative Officer and Office Clerk.

Students' demographics.

Respondents were asked to provide information regarding students' demographics as well as their online learning activities (see Table 11). The results show that most of students felt comfortable using a computer (91.3%) and ATutor (83.5%), of which 27.1% of students felt comfortable level at 8 of 10 using a computer and 25.1% of students felt comfortable level at 8 of 10 of using ATutor. There were 77.8 % of students having internet at home and 49.3% of their home internet were hi-speed. 51.2% of students indicated that they accessed the course website at work, of which 55.6% the respondents indicated that internet connection at their office was Hi-speed. The largest percentage of respondents had taken two courses that used ATutor (44.4%) followed closely by taken one course that used ATutor (44.0%). According to the results, 69.6% of respondents spent two hours or less in each week for online and 44.0% of students reported that they accessed to ATutor one time in each week. About two-third of respondents (65.2%) indicated that they sent instructor e-mail less than one time in each week.

Respondents were asked to provide information regarding their participation in chat, forum, and group forum in each week. According to the results, about two-third of respondents indicated that they participated in these communication features less than one time in each week; group forum (69.1%), chat (65.2%), and forum (64.7%), respectively. Whereas, around twenty percent of respondents indicated that they participated in those activities one time per week; chat (23.2%), forum (23.2%), and group forum (21.3%), respectively.

Table 11

Students' Demographics (N=207)

Constructs	*f*	%
1. Comfortable of using computer		
Uncomfortable 2	1	0.5
Uncomfortable 3	-	-
Uncomfortable 4	1	0.5
Uncomfortable 5	16	7.7
Comfortable 6	15	7.2
Comfortable 7	38	18.4
Comfortable 8	56	27.1
Comfortable 9	46	22.2
Very comfortable 10	34	16.4
2. Comfortable of using ATutor		
Very uncomfortable 1	1	0.5
Uncomfortable 3	2	1.0
Uncomfortable 4	4	1.9
Uncomfortable 5	27	13.0
Comfortable 6	35	16.9
Comfortable 7	46	22.2
Comfortable 8	52	25.1
Comfortable 9	25	12.1
Very comfortable 10	15	7.2
3. Home internet access		
Yes	161	77.8
No	46	22.2
4. Place to access course website		
Home	100	48.3
Work	106	51.2
Other	1	0.5
5. Home internet connection		
Low-speed (Dial-up)	38	18.4
Hi-speed (ADSL, Cable)	102	49.3
LAN	10	4.8
Other	57	27.5
6. Work internet connection		
Low-speed (Dial-up)	9	4.3
Hi-speed (ADSL, Cable)	115	55.6
LAN	78	37.7
Other	5	2.4
7. Courses taken that used ATutor		
1 course	91	44.0
2 courses	92	44.4
3 courses	15	7.2

Table 11 (Continued)

Students' Demographics (N=207)

Constructs	*f*	%
4 courses	3	1.4
more than 4 courses	6	2.9
8. Time spent online in each week		
2 hours or less	144	69.6
3-4 hours	44	21.3
5-6 hours	16	7.7
7-8 hours	2	1.0
more than 9 hours	1	0.5
9. E-mail instructor in each week		
Less than 1 time	135	65.2
1 time	55	26.6
2 times	12	5.8
3 times	4	1.9
4 or more times	1	0.5
10. Access to ATutor in each week		
Less than 1 time	57	27.5
1 time	91	44.0
2 times	37	17.9
3 times	14	6.8
4 or more times	8	3.9
11. Chat participated in each week		
Less than 1 time	135	65.2
1 time	48	23.2
2 times	14	6.8
3 times	7	3.4
4 or more times	3	1.4
12. Forum participated in each week		
Less than 1 time	134	64.7
1 time	48	23.2
2 times	16	7.7
3 times	5	2.4
4 or more times	4	1.9
13. Group Forum participated in each week		
Less than 1 time	143	69.1
1 time	44	21.3
2 times	12	5.8
3 times	4	1.9
4 or more times	4	1.9

2. Instructors characteristic and demographics.

Instructors were asked to provide information regarding their characteristics and demographics. Data regarding the instructors' information are summarized in Table 12. The results of the survey indicated that the respondents were 60% female 40% male and 70.0% of all respondents were between the ages of 51-60. The respondents indicated that they had teaching experience at TDU between 21-30 years (70%), while 40.0% of all respondents indicated that they had academic experience for 1-5 years before working at TDU. All instructors felt comfortable using the computer and ATutor (100.0%), which 30.0% of instructors felt comfortable level 8 of 10 and 10 of 10 of using computer and 40.0% of instructors felt comfortable level 6 of 10 of using ATutor. Most respondents had internet at home (70%) and 60.0% of their home internet connection were hi-speed. The largest percent of instructors accessed the course website at work (60.0%), with a LAN.

Respondents were asked to report on their online teaching experience and activities. According to the results, half of all respondents indicated that they had online teaching experience for four semesters or more (50%). As the role in teaching via ATutor, respondents indicated that they had a role as instructors (40.0%) and co-instructor (80.0%). For the reasons for using ATutor, the respondents indicated that they used ATutor as; a supplement to traditional distance course (80.0%); a tool for interact with students (70.0%); and a tool for teaching a portion of distance education course (60.0%). The majority of respondents spent three hours or less in online activities in each week (80.0%). The largest percentage of respondents sent student e-mail one time

(30.0%) and four or more time in each week (30.0%). About 40.0% reported that they

accessed ATutor less than one time in each week, while 30.0% accessed ATutor two

times per week. Instructors indicated that they participated in the following

communication tools less than one time per week; chat (90.0%), group forum (70.0%),

and forum (60.0%), respectively. Whereas, 20.0% of respondents indicated that they

participated in forum two times a week and participated in group forum one time a week.

Most of respondents (80.0%) indicated that ATutor is easy to learn and use, which

50.0% of them think ATutor is easy to learn and use level 6 of 10-points scale. Most of

respondents (90.0%) indicated that overall they were satisfied with ATutor, which 40.0%

of them were satisfied with ATutor in level 7 of 10-points scale. Half of all respondent

indicated that TDU provided a good support for online teaching (50.0%). The largest

percentage of respondents reported that they attended ATutor workshop two times

(40.0%). Most instructors (80.0%) indicated that they would recommend ATutor to their

colleague.

Table 12

Instructors' Characteristics and Demographics (N=10)

Constructs	f	%
1. Gender		
Male	4	40.0
Female	6	60.0
2. Age		
31-40 years	1	10.0
41-50 years	1	10.0
51-60 years	7	70.0
61-70 years	1	10.0
3.Teaching experience at TDU		
1-10 years	2	20.0
11-20 years	1	10.0
21-30 years	7	70.0

Table 12 (Continued)

Instructors' Characteristics and Demographics (N=10)

Constructs	*f*	%
4. Academic working experience before TDU		
1-5 years	4	40.0
6-10 years	2	20.0
11-15 years	2	20.0
15-20 years	2	20.0
5. Comfortable of using computer		
Comfortable 6	1	10.0
Comfortable 7	1	10.0
Comfortable 8	3	30.0
Comfortable 9	2	20.0
Very comfortable 10	3	30.0
6. Comfortable of using ATutor		
Comfortable 6	4	40.0
Comfortable 7	3	30.0
Comfortable 8	3	30.0
7. Home internet access		
Yes	7	70.0
No	3	30.0
8. Place to access course website		
Home	4	40.0
Work	6	60.0
9. Home internet connection		
Low-speed (Dial-up)	1	10.0
Hi-speed (ADSL, Cable)	6	60.0
Other	3	30.0
10. Work internet connection		
LAN	10	100.0
11. Online teaching experience		
1 semester	2	20.0
2 semester	1	10.0
3 semester	2	20.0
4 semester or more	5	50.0
12. Role in teaching via ATutor*		
Instructor	4	40.0
Co-instructor	8	80.0

Note. *Percentages do not sum to 100 because respondents were able to select more than one answer.

Table 12 (Continued)

Instructors' Characteristics and Demographics (N=10)

Constructs	*f*	%
13. Reasons for using ATutor*		
As supplement to traditional distance course	8	80.0
As a tool for interact with students	7	70.0
As a tool for teaching a portion of distance	6	60.0
education course		
14. Time spent online in each week		
3 hours or less	8	80.0
4-6 hours	2	20.0
15. E-mail student in each week		
Less than 1 time	2	20.0
1 time	3	30.0
2 times	2	20.0
4 or more times	3	30.0
16. Access to ATutor in each week		
Less than 1 time	4	40.0
1 time	2	20.0
2 times	3	30.0
4 or more times	1	10.0
17. Chat participated in each week		
Less than 1 time	9	90.0
1 time	1	10.0
18. Forum participated in each week		
Less than 1 time	6	60.0
1 time	1	10.0
2 times	2	20.0
4 or more times	1	10.0
19. Group Forum participated in each week		
Less than 1 time	7	70.0
1 time	2	20.0
2 times	1	10. 0
20. Think about ATutor		
Difficult to learn and use 5	2	20.0
Easy to learn and use 6	5	50.0
Easy to learn and use 7	1	10.0
Easy to learn and use 8	2	20.0

Note. *Percentages do not sum to 100 because respondents were able to select more than one answer.

Table 12 (Continued)

Instructors' Characteristics and Demographics (N=10)

Constructs	*f*	%
21. Overall satisfaction with ATutor		
Unsatisfied 3	1	10.0
Satisfied 6	3	30.0
Satisfied 7	4	40.0
Satisfied 8	1	10.0
Satisfied 9	1	10.0
22. Supported from TDU		
Good	5	50.0
Poor	4	40.0
Very poor	1	10.0
23. ATutor workshop attended		
1 time	3	30.0
2 times	4	40.0
3 or more times	3	30.0
24. Recommend ATutor to colleague		
Yes	8	80.0
No	1	10.0
Other	1	10.0

3. What demographic variables were associated with student and instructors' perceptions of using ATutor?

1. Students' Perceptions.

To investigate if there were statistically significant association between demographic variables (constants) with students' perception of using ATutor the Pearson correlation coefficients was conducted. The Pearson Product-Moment Correlation Coefficient (*r*) expresses the degree of relationship between two variables. The correlation coefficient may take on any value from a perfect positive relationship (+1.00) through no relationship (0.00) to a perfect negative (-1.00). The sign of the correlation coefficient (+ , -) defines the direction of relationship, either positive or negative. A positive relationship is indicated that as the value of on one variable increase, the value of

the other variable increase; as one decrease the other also decreases. Conversely, a negative relationship means that as one variable increase, the other decrease, and vice-versa.

Table 13 shows that ten students' demographic variables (constants) had significant correlation and nine variables did not. The positive and significant correlation was found between five demographic variables and students' perception of using ATutor. First, gender and students' perception, there were significant and positive correlation between gender and usefulness ($r = 0.146$, $p < 0.05$) and interaction and communication ($r = 0.138$, $p < 0.05$), respectively. Second, there were significant and positive correlation between perceived comfortable of using computer and students' perception of using ATutor including, self-directed learning ($r = 0.373$, $p < 0.01$), usefulness ($r = 0.368$, $p < 0.05$), e-learning andragogical design ($r = 0.335$, $p < 0.01$), online learning ($r = 0.315$, $p < 0.01$), ease of use ($r = 0.306$, $p < 0.01$), and interaction and communication ($r = 0.291$ $p < 0.01$), respectively. Third, there were significant and positive correlation between perceived comfortable of using ATutor and students' perception of using ATutor including, interaction and communication ($r = 0.471$, $p < 0.01$), ease of use ($r = 0.464$, $p < 0.01$), e-learning andragogical design ($r = 0.462$, $p < 0.01$), self-directed learning ($r = 0.461$, $p < 0.01$), usefulness ($r = 0.454$, $p < 0.01$), and online learning ($r = 0.398$, $p < 0.01$), respectively. Forth, there were significant and positive correlation between time spent online in each week and students' perception of using ATutor including, ease of use ($r = 0.299$, $p < 0.01$), usefulness ($r = 0.232$, $p < 0.01$), e-learning andragogical design ($r = 0.200$, $p < 0.01$), online learning ($r = 0.194$, $p < 0.01$), interaction and communication ($r = 0.183$, $p < 0.01$), and self-directed learning ($r = 0.153$, $p < 0.01$), respectively. Last,

there were significant and positive correlation between how often one accessed ATutor each week and students' perception of using ATutor including, usefulness ($r = 0.198$, $p < 0.01$), ease of use ($r = 0.195$, $p < 0.01$), online learning ($r = 0.185$, $p < 0.01$), e-learning andragogical design ($r = 0.183$, $p < 0.01$), interaction and communication ($r = 0.171$, $p < 0.01$), and self-directed learning ($r = 0.155$, $p < 0.01$), respectively.

The negative and significant correlation was found between five demographic variables and students' perception of using ATutor. First, there were significant and negative correlation between age and students' perception of using ATutor including, usefulness ($r = -0.363$, $p < 0.01$), e-learning andragogical design ($r = -0.306$, $p < 0.01$), self-directed learning ($r = -0.300$, $p < 0.01$), online learning ($r = -0.289$, $p < 0.01$), interaction and communication ($r = -0.232$, $p < 0.01$), and ease of use ($r = -0.197$, $p < 0.01$), respectively. Second, there were significant and negative correlations between home internet access and students' perception of usefulness of using ATutor ($r = -0.156$, $p < 0.05$). Third, there were significant and negative correlation between place to access course website and students' perception of using ATutor including, usefulness ($r = -0.227$, $p < 0.01$), ease of use ($r = -0.227$, $p < 0.01$), online learning ($r = -0.199$, $p < 0.01$), interaction and communication ($r = -0.192$, $p < 0.01$), and e-learning andragogical design ($r = -0.184$, $p < 0.01$), respectively. Forth, there were significant and negative correlation between home internet connection and students' perception of using ATutor including, e-learning andragogical design ($r = -0.146$, $p < 0.05$) and interaction and communication ($r = -0.138$, $p < 0.05$), respectively. Last, there were significant and negative correlation between work internet connection and students' perception of using ATutor including,

ease of use ($r = -0.154$, $p < 0.05$) and self-directed learning ($r = -0.142$, $p < 0.05$),

respectively.

Table 13

Correlation between Demographic Variables and Students' Perceptions of Using ATutor

Independent variable (Constants)	Students' perception of					
	Usefulness	Ease of use	Interaction and communi-cation	E-learning andragogical design	Online learning	Self-Directed Learning
1. Gender	.146*	.101	.138*	.116	.056	.068
2. Comfort using computer	.368**	.306**	.291**	.335**	.315**	.373**
3. Comfort using ATutor	.454**	.464**	.471**	.462**	.398**	.461**
4. Time spent online each week	.232**	.299**	.183**	.200**	.194**	.153**
5. Access to ATutor in each week	.198*	.195**	.171*	.183**	.185**	.155**
6. Age	-.363**	-.197**	-.232**	-.306**	-.289**	-.300**
7. Home internet access	-.156*	-.067	-.126	-.125	-.115	-.105
8. Place to access course website	-.227**	-.227**	-.192**	-.184**	-.199**	-.129
9. Home internet connection	-.083	-.107	-.138*	-.146*	-.134	-.066
10. Work internet connection	-.109	-.154*	-.109	-.071	-.124	-.142*
11. E-mail instructor in each week	.016	.008	.068	.029	.042	.087
12. Group Forum participated in each week	.102	.036	.058	.092	.114	.109
13. Chat participated in each week	.041	-.016	.036	.014	.022	.048
14. Forum participated in each week	.047	-.025	-.015	.030	.025	.026

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 13 (Continued)

Correlation between Demographic Variables and Students' Perceptions of Using ATutor

Independent variable (Constants)	Students' perception of					
	Usefulness	Ease of use	Interaction and communi- cation	E-learning andragogical design	Online learning	Self- Directed Learning
15. Marital Status	.008	.034	-.010	-.001	-.001	.024
16. Learning Status	.043	.067	.026	-.022	-.016	-.072
17. Courses taken that used ATutor	.001	.007	-.070	-.011	.006	-.021
18. Employment status	-.051	-.097	-.090	-.047	-.001	.017
19. Number of children	-.088	-.039	-.067	-.103	-.047	-.074

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

2. Instructors' Perceptions.

Table 14 shows that nine instructors' demographic variables (constants) had significant correlation and eighteen variables did not. The positive and significant correlation was found between five demographic variables and instructors' perception of using ATutor as follows. First, there were significant and positive correlation between e-mailing student in each week and instructors' perception of interaction and communication ($r = 0.638, p < 0.05$). Second, there were significant and positive correlation between chat participated in each week and instructors' perception of usefulness of ATutor ($r = 0.677, p < 0.05$). Third, there were significant and positive correlation between forum participated in each week and instructors' perception of usefulness of ATutor ($r = 0.685, p < 0.05$). Fourth, there were significant and positive correlation between group forum participated each week and instructors' perception of

usefulness of ATutor ($r = 0.753$, $p < 0.05$), and ease of use, ($r = 0.649$, $p < 0.05$), respectively. Lastly, there were significant and positive correlations between ATutor satisfaction and instructors' perception of usefulness of ATutor ($r = 0.814$, $p < 0.01$), ease of use ($r = 0.792$, $p < 0.01$), interaction and communication ($r = 0.753$, $p < 0.05$), and teaching online by using ATutor ($r = 0.696$, $p < 0.05$), respectively.

Negative and significant correlations were found between four demographic variables and instructors' perception of using ATutor. First, there were significant and negative correlation between online teaching experience and instructors' perception of usefulness ($r = -0.726$, $p < 0.05$), and teaching online by using ATutor ($r = -0.712$, $p < 0.05$), respectively. Second, there were significant and negative correlation between role as instructor in teaching via ATutor and instructors' perception of teaching online by using ATutor ($r = -0.731$, $p < 0.05$). Third, there were significant and negative correlation between supported from the university and instructors' perception of teaching online by using ATutor ($r = -0.889$, $p < 0.01$), usefulness, ($r = -0.871$, $p < 0.01$), interaction and communication ($r = -0.825$, $p < 0.01$), and ease of use, ($r = -0.649$, $p < 0.05$), respectively. Last, there were significant and negative correlation between ATutor workshop attended and instructors' perception of teaching online by using ATutor ($r = -0.815$, $p < 0.01$) and usefulness of ATutor ($r = -0.706$, $p < 0.05$), respectively.

Table 14

Correlation between Demographic Variables and Instructors' Perceptions of Using

ATutor

(Constant)	Instructors' perception of			
	Usefulness	Ease of use	Interaction and communication	Teaching online by using ATutor
1. E-mail student in each week	.537	.564	.638 *	.407
2. Chat participated in each week	.677 *	.487	.316	.404
3. Forum participated in each week	.685 *	.538	.485	.474
4. Group Forum participated in each week	.753 *	.649 *	.572	.571
5. ATutor satisfaction	.814 **	.792 **	.753 *	.696 *
6. Online teaching experience	-.726 *	-.585	-.566	-.712 *
7. Role as instructor in teaching via ATutor	-.574	-.534	-.251	-.731 *
8. Support from TDU	-.871 **	-.649 *	-.825 **	-.889 **
9. ATutor workshop attended	-.706 *	-.497	-.360	-.815 **
10. ATutor Use	.320	.287	.423	.361
11. Home internet access	.477	.453	.378	.333
12. Place to access course website	.255	.063	.023	.301
13. Home internet connection	.533	.563	.463	.437
14. Work internet connection	.567	.603	.583	.543
15. Role as Co-Instructor in teaching via ATutor	.315	.423	.223	.447
16. Time spent online each week	.234	.346	.474	.342

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 14 (Continued)

Correlation between Demographic Variables and Instructors' Perceptions of Using

ATutor

(Constant)	Instructors' perception of			
	Usefulness	Ease of use	Interaction and communication	Teaching online by using ATutor
17. Access to ATutor in each week	.344	.214	.251	.116
28. Think About ATutor	.528	.589	.505	.309
19. Reasons for using ATutor; Interaction	.375	.386	.231	.471
20. Reasons for using ATutor; Teaching	.574	.534	.592	.561
21. Gender	-.064	-.094	.137	-.344
22. Age	-.565	-.504	-.242	-.356
23.Teaching experience at TDU	-.462	-.439	.007	-.412
24. Academic working experience before TDU	-.328	-.303	-.532	-.029
25. Computer use	-.243	.030	-.196	-.184
23. Reasons for using ATutor; Supplement	-.625	-.538	-.474	-.474
27. Recommend ATutor to colleague	-.024	.084	.096	-.008

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Summary Findings for Research Question 1

1. Students' demographics and characteristics.

Most students who participated in the study were female (51.7%), ages between 41-50 years (34.8%), single (49.8%), government officer (76.8%), and part-time student (99.5%). Students indicated that they had internet access at home (77.8%), used hi-speed internet at home (49.3%), accessed ATutor at their office (51.2%), use hi-speed internet at their office (55.6%), had taken two ATutor course (44.4%), spent two hours or less each week for online (69.6%), accessed ATutor one time each week (44.0%), and sent their instructor e-mail less than one time in each week (65.2%). Students indicated that they had participated in the following communication tools less than one time each week: group forum (69.1%); chat (65.2%); and forum (64.7%). Most students felt comfortable using a computer (91.3%) and ATutor (83.5%).

2. Instructors' demographics and characteristics.

Most instructors were female (60.0%), age between 51-60 years (70.0%), teaching experience at TDU was between 21-30 years (70.0%), and had 1-5 years of academic experience before working at TDU (40.0%). Instructors indicated that they had internet access at home (70%), used hi-speed internet at home (60.0%), accessed ATutor at the office (60.0%), had online teaching experience for four semesters or more (50.0%), had a role as co-instructor (80.0%), and used ATutor as a supplement to traditional distance course (80.0%). Instructors indicated that they spent three hours or less in online activities each week (80.0%), sent students e-mail one to four or more times each week

(30.0%), and accessed ATutor less than one time each week (40.0%). Instructors indicated that they had participated in the following communication tools less than one time each week: chat (90.0%); group forum (70.0%); and forum (60.0%). Instructors also indicated that TDU provided good support for online teaching (50.0%), attended ATutor workshops two times (40.0%), and would recommend ATutor to their colleague (80.0%).

3. Students' demographics and characteristics associated with their perception of using ATutor.

The results show that there were five students' demographic variables that had significant and positive correlations with students' perceptions of using ATutor including gender, comfort with using the computer, comfort with using ATutor, time spent online each week, and how often they accessed ATutor each week. Additionally, there were five students' demographic variables that had significant and negative correlations with students' perceptions of using ATutor including age, home internet access, place to access course website, home internet connection, and work internet connection.

4. Instructors' demographics and characteristics associated with their perception of using ATutor

The result show that there were five instructors' demographic variables that had significant and positive correlations with instructors' perceptions of using ATutor including e-mailing students each week, chat participated in each week, forum participated in each week, group forum participated in each week, and ATutor

satisfaction. Additionally, there were four instructors' demographic variables that had

significant and negative correlation with instructors' perceptions of using ATutor

including online teaching experience, role as instructor in teaching via ATutor, support

from TDU, and ATutor workshop attended.

Findings Related to Research Question 2

Quantitative Findings

Research question two sought to determine what students' and instructors'

perceptions were of using ATutor as a LCMS. What did users perceive in terms of:

usefulness, ease of use, interaction and communication, e-learning andragogical design,

perception of online learning, self-directed learning, and using ATutor.

Students' perception.

1. Students' perception of the usefulness of ATutor features.

The perceptions of students toward the usefulness of ATutor features are

presented in Table 15. A ten-point Likert-type scales with 10 = Very useful, to 1 = not at

all useful, and 0= Never use this feature, asked respondents to respond to a 22-item

usefulness of ATutor survey. The table displays the descriptive statistics for twenty two

dependent variables representing students' perception of usefulness of ATutor.

Overall, the results showed that students' perception of the usefulness of ATutor

features received a mean score (*M*) of 6.84 and standard deviation (*SD*) of 1.90. The

mean scores for all items in this cluster ranged from 6.31 to 7.40 out of 10 and standard

deviations ranged from 1.78 to 2.19.

For specific items, students indicated their highest average perceived scores with

the usefulness of ATutor features, such as, tests & surveys ($M = 7.40$, $SD = 1.93$), content

navigation included course content ($M = 7.24$, $SD = 1.98$), and users online ($M = 7.24$,

$SD = 1.92$), respectively.

Table 15

Mean and Standard Deviation for Students' Perception of the Usefulness of ATutor

Features

Usefulness of A-Tutor features	N	M	SD
1. Tests & Surveys	182	7.40	1.93
2. Content Navigation included course content	206	7.24	1.98
3. Users Online	173	7.24	1.92
4. Blogs	167	7.17	1.84
5. Forums	177	7.07	1.81
6. File Storage	153	7.01	2.15
7. Links	158	6.95	2.11
8. Chat	173	6.85	1.97
9. Reading List	146	6.84	2.12
10. Export Content	148	6.80	2.07
11. Group	174	6.76	2.04
12. Site-map	151	6.70	1.98
13. Announcements	162	6.65	2.03
14. Frequently Asked Question (FAQ)	147	6.63	1.95
15. Directory	150	6.61	2.19
16. TILE Repository Search	144	6.59	1.94
17. My Tracker	142	6.58	1.91
18. Glossary	150	6.57	1.78
19. Related Topics	155	6.55	2.03
20. Polls	140	6.42	1.99
21. ACollab	140	6.31	2.18
22. Overall, I was satisfied with the usefulness of ATutor features.	207	6.84	1.90

Note. The scale of the answers is: 10 = Very Useful to 1 = Not at all useful

2. Students' perception of the ease of use of ATutor features.

The descriptive statistics for the students' perception of the ease of use of ATutor features are shown in Table 16. Overall, the results show that students' perception of the ease of use of ATutor features received a mean score (*M*) of 7.37 and standard deviation (*SD*) of 1.71. The mean scores for all items in this cluster ranged from 7.10 to 7.60 out of 10 and standard deviations ranged from 1.71 to 1.95.

For specific items, students indicated their highest average perceived scores with the ease of use of ATutor features, such as, ATutor system enables me to learn the content as needed (*M* = 7.60, *SD* = 1.95), and ATutor system is user-friendly (*M* = 7.48, *SD* = 1.80), respectively.

Table 16

Mean and Standard Deviation for Students' Perception of the Ease of Use of ATutor Features (N=207)

Ease of use of ATutor features	*M*	*SD*
1. ATutor system enables me to learn the content as needed.	7.60	1.95
2. ATutor system is user-friendly.	7.48	1.80
3. ATutor system makes it easy for me to find the content I need.	7.41	1.84
4. ATutor system is easy to use.	7.38	1.81
5. ATutor system records my learning progress and performance.	7.35	1.83
6. The operation of ATutor system is stable.	7.10	1.93
7. Overall, I am satisfied with the ease of use and system operation of ATutor.	7.37	1.71

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

3. Students' perception of the interaction and communication.

Table 17 displays the descriptive statistics for students' perception of interaction and communication. Overall, the results showed that students' perception of interaction and communication received a mean score (*M*) of 7.33 and standard deviation (*SD*) of 1.78. The mean scores for all items in this cluster ranged from 7.05 to 7.45 out of 10 and standard deviations ranged from 1.76 to 1.95.

For specific items, students indicated their highest average perceive scores with the interaction and communication, such as, ATutor system makes it easy for me to access the content (*M* = 7.45, *SD* = 1.82), and I felt ATutor enhanced communication with the teacher (*M* = 7.43, *SD* = 1.76), respectively.

Table 17

Mean and Standard Deviation for Students' Perception of the Interaction and Communication (N=207)

Interaction and communication	*M*	*SD*
1. ATutor system makes it easy for me to access the content.	7.45	1.82
2. I felt ATutor enhanced communication with teacher.	7.43	1.76
3. ATutor system makes it easy for me to access the course activities.	7.35	1.88
4. I felt ATutor enhanced communication with other students.	7.20	1.93
5. ATutor system makes it easy for me to discuss questions with my teachers.	7.17	1.85
6. ATutor system makes it easy for me to access the shared content from the learning community.	7.17	1.90
7. ATutor system makes it easy for me to share what I learn with the learning community.	7.06	1.88
8. ATutor system makes it easy for me to discuss questions with other students.	7.05	1.95
9. Overall, I was satisfied with the level of interactivity in the course.	7.33	1.78

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

4. Students' perception of the E-learning andragogical design.

The descriptive statistics for the students' perception of the e-learning andragogical design for ATutor are shown in Table 18. Overall, the results showed that students' perception of the e-learning andragogical design for ATutor received a mean score (*M*) of 7.39 and standard deviation (*SD*) of 1.77. The mean scores for all items in this cluster ranged from 7.07 to 7.62 out of 10 and standard deviations ranged from 1.71 to 2.04.

For specific items, students indicated their highest average perceived scores with the e-learning andragogical design for ATutor features, such as, ATutor offers flexibility in learning as to time and place (*M* = 7.62, *SD* = 1.97), and using ATutor enhanced autonomous Pre-test/ Post-test (*M* = 7.55, *SD* = 1.94), respectively.

Table 18

Mean and Standard Deviation for Students' Perception of the E-learning Andragogical Design (N=207)

Interaction and communication	*M*	*SD*
A. Connectivity:	7.38	2.04
1. Access to ATutor was available when needed.		
B. Flexibility:		
2. ATutor offers flexibility in learning as to time and place.	7.62	1.97
3. I find e-learning to be valuable because it can be flexible to allow me to use it when I want to.	7.53	1.93
C. Designed of e-learning:	7.49	1.80
4. Directions/support services are needed to use ATutor.		
5. The course is designed with textual contents that improve my learning.	7.36	1.74
6. The course is designed with various visual and auditory contents that improve my learning.	7.30	1.75

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

Table 18 (Continued)

Mean and Standard Deviation for Students' Perception of the E-learning Andragogical

Design (N=207)

Interaction and communication	*M*	*SD*
7. ATutor site was clearly organized.	7.29	1.71
8. It was easy to navigate within ATutor.	7.07	1.81
D. Interactivity:	7.55	1.94
9. Using ATutor enhanced autonomous Pre-test/ Post-test.		
10. Course assessments are in agreement with the course contents and learning objectives.	7.54	1.81
11. Using ATutor allows me to accomplish learning tasks quickly.	7.11	1.83
E. Collaboration:	7.19	1.92
12. I felt ATutor enhanced collaboration with other students.		
13. I felt part of a learning community of using ATutor.	7.15	1.80
14. ATutor communication tools I used (Chat, Forum) were worthwhile.	7.07	1.94
F. Extended opportunities:	7.33	1.88
15. Using ATutor learning increases my learning productivity compares to correspondence.		
16. Using ATutor learning increases my effectiveness in learning compare to correspondence.	7.27	1.90
G. Motivation:	7.34	1.92
17. I always felt challenged and motivated to learn via ATutor.		
18. I enjoyed using ATutor as a supplement to my course.	7.24	1.98
19. I feel confident using ATutor.	7.20	1.93
20. Overall, I was satisfied with ATutor interface .	7.39	1.77

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

5. Students' perception of online learning.

Table 19 displays the descriptive statistics for students' perception of online

learning. Overall, the results showed that students' perception of online learning received

a mean score (*M*) of 7.49 and standard deviation (*SD*) of 1.59. The mean scores for all

items in this cluster ranged from 7.28 to 7.73 out of 10 and standard deviations ranged

from 1.62 to 1.85.

For specific items, students indicated their highest average perceive scores with

online learning, such as, I find ATutor courses useful for my learning (*M* = 7.73, *SD* =

1.65), and I believe that ATutor offers valuable E- learning activities (*M* = 7.69, *SD* =

1.62), respectively.

Table 19

Mean and Standard Deviation for Students' Perception of Online Learning (N=207)

Perception of online learning	*M*	*SD*
1. I find ATutor courses useful for my learning.	7.73	1.65
2. I believe that ATutor offer valuable E- learning activities.	7.69	1.62
3. I believe ATutor has potential as a learning tool for communication.	7.57	1.65
4. I find using ATutor courses make it easier to learn course contents.	7.56	1.72
5. I find ATutor is easy to use.	7.50	1.65
6. I find using ATutor courses enhance my effectiveness in learning.	7.43	1.73
7. I would recommend a course that uses ATutor to other students.	7.37	1.85
8. ATutor courses contribute significantly to my professional growth.	7.35	1.77
9. I enjoy working with ATutor.	7.28	1.78
10. Overall students' perception of online learning.	7.49	1.59

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

6. Students' perception of Self-Directed Learning.

Table 20 displays the descriptive statistics for students' perception of Self-

Directed Learning. Overall, the results showed that students' perception of Self-Directed

Learning received a mean score (*M*) of 7.33 and standard deviation (*SD*) of 1.47. The

mean scores for all items in this cluster ranged from 7.14 to 7.42 out of 10 and standard deviations ranged from 1.47 to 1.66.

For specific items, students indicated their highest average perceived scores with Self-Directed Learning, such as, "Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems" ($M = 7.42$, $SD = 1.53$), and "Overall, I have the ability to set an appropriate pace for learning" ($M = 7.33$, $SD = 1.66$), respectively.

Table 20

Mean and Standard Deviation for Students' Perception of Self-Directed Learning (N=207)

Perception of Self-directed Learning	*M*	*SD*
1. Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems.	7.42	1.53
2. Overall, I have the ability to set an appropriate pace for learning.	7.33	1.66
3. Overall, I have the ability to develop a plan for completing course work.	7.26	1.65
4. Overall, I have knowledge of a variety of potential learning resources.	7.20	1.56
5. Overall, I have the ability to set appropriate criteria to assess my own learning.	7.14	1.60
6. Overall, I have the ability to accept and use criticism.	7.14	1.62
7. Overall Students' perception of Self-Directed Learning.	7.33	1.47

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

2. Instructors' perception.

1. Instructor' perception of the usefulness of ATutor features.

The perceptions of instructors toward the usefulness of ATutor features are

presented in Table 21. Overall, the results showed that instructors' perception of the

usefulness of ATutor features received a mean score (*M*) of 7.40 and standard deviation

(*SD*) of 1.35. The mean scores for all items in this cluster ranged from 7.25 to 9.00 out of

10 and standard deviations ranged from 0.69 to 2.17.

For specific items, instructors indicated their highest average perceive scores with

the usefulness of ATutor features, such as, announcements (*M* = 9.00, *SD* = 1.41), and

content navigation included course content (*M* = 8.80, *SD* = 1.03), respectively.

Table 21

Mean and Standard Deviation for Instructors' Perception of the Usefulness of ATutor

Features

Usefulness of ATutor features	*N*	*M*	*SD*
1. Announcements	10	9.00	1.41
2. Content Navigation included course content	10	8.80	1.03
3. TILE Repository Search	5	8.60	1.14
4. Related Topics	6	8.50	1.23
5. Users Online	8	8.25	1.04
6. My Tracker	7	8.14	0.69
7. Directory	8	8.13	1.25
8. ACollab	8	8.13	1.64
9. Forums	8	8.00	1.69
10. File Storage	7	8.00	1.41
11. Blogs	8	7.88	1.46
12. Links	7	7.86	0.90
13. Group	9	7.78	2.17

Note. The scale of the answers is: 10 = Very useful to 1 = Not at all useful

Table 21 (Continued)

Mean and Standard Deviation for Instructors' Perception of the Usefulness of ATutor

Features

Usefulness of ATutor features	N	M	SD
14. Export Content	8	7.75	1.17
15. Frequently Asked Question (FAQ)	9	7.67	1.8
16. Tests & Surveys	10	7.60	1.84
17. Site-map	7	7.57	1.62
18. Polls	9	7.44	1.59
19. Reading List	9	7.44	1.33
20. Chat	7	7.29	1.89
21. Glossary	8	7.25	2.05
22. Overall, I was satisfied with the usefulness of ATutor features	10	7.40	1.35

Note. The scale of the answers is: 10 = Very useful to 1 = Not at all useful

2. Instructors' perception of the ease of use of ATutor features.

Table 22 displays the descriptive statistics for instructors' perception of the ease of use of ATutor features. Overall, the results showed that instructors' perception of the ease of use of ATutor features received a mean score (M) of 7.10 and standard deviation (SD) of 1.37. The mean scores for all items in this cluster ranged from 6.50 to 7.60 out of 10 and standard deviations ranged from 1.08 to 2.13.

For specific items, instructors indicated their highest average perceived scores with the ease of use of ATutor features, such as, ATutor system is user-friendly ($M = 7.60$, $SD = 1.08$), and teaching in an asynchronous online learning environment was easy ($M = 7.50$, $SD = 1.43$), respectively.

Table 22

Mean and Standard Deviation for Instructors' Perception of the Ease of Use of ATutor

Features (N=10)

Ease of use of A-Tutor features	*M*	*SD*
1. A-Tutor system is user-friendly.	7.60	1.08
2. Teaching in an asynchronous online learning environment was easy.	7.50	1.43
3. Learning to use A-Tutor features were easy.	7.30	1.42
4. The operation of A-Tutor system is stable.	7.10	1.60
5. Communicating with students by using A-Tutor were easy.	7.00	1.70
6. Tracking students' assignments were easy.	6.90	2.13
7. Receiving feedback from students was easy.	6.50	1.96
8. Overall, I am satisfied with the ease of use and system operation of A-Tutor.	7.10	1.37

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

3. Instructors' perception of the interaction and communication.

The descriptive statistics for the instructors' perception of the interaction and communication are shown in Table 23. Overall, the results showed that instructors' perception of the interaction and communication received a mean score (*M*) of 7.30 and standard deviation (*SD*) of 1.89. The mean scores for all items in this cluster ranged from 6.80 to 7.60 out of 10 and standard deviations ranged from 1.66 to 2.00.

For specific items, instructors indicated their highest average perceived scores with the interaction and communication, such as, "I felt ATutor enhanced communication with students" (*M* = 7.60, *SD* = 1.96).

Table 23

Mean and Standard Deviation for Instructors' Perception of the Interaction and

Communication (N=10)

Interaction and communication	*M*	*SD*
1. I felt ATutor enhanced communication with students.	7.60	1.96
2. ATutor system makes it easy for me to share what I know with the learning community.	7.30	2.00
3. I felt ATutor enhanced collaboration with students.	7.10	1.66
4. ATutor system makes it easy for me to discuss questions with my students.	6.80	1.93
5. Overall, I was satisfied with the level of interactivity in the course.	7.30	1.89

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

4. Instructors' perception of teaching online for TDU.

Table 24 displays the descriptive statistics for instructors' perception of teaching online for TDU. Overall, the results showed that instructors' perception of teaching online for TDU received a mean score (*M*) of 5.70 and standard deviation (*SD*) of 2.00. The mean scores for all items in this cluster ranged from 4.10 to 7.90 out of 10 and standard deviations ranged from 1.69 to 3.35.

For specific items, instructors indicated their highest average perceive scores with online learning, such as, planning an online course takes much time (*M* = 7.90, *SD* = 2.73), teaching online course counted toward tenure and promotion (*M* = 7.20, *SD* = 2.62), and on-going workshops were provided by TDU (*M* = 7.20, *SD* = 1.62), respectively.

Table 24

*Mean and Standard Deviation for Instructors' Percep*tio*n of teaching online for TDU*

(N=10)

Perception of using ATutor	*M*	*SD*
1. Planning an online course takes much time.	7.90	2.73
2. Teaching online course counted toward tenure and promotion.	7.20	1.69
3. On-going workshops were provided by TDU.	7.20	2.62
4. Teaching online environment takes much time.	7.00	2.71
5. Administrative supports were provided by TDU.	6.80	2.53
6. Teaching online was easier.	6.30	2.83
7. Adequate monetary support for teaching online course was available.	5.60	2.80
8. Intellectual property rights within my courses were respected.	5.30	2.41
9. Flexible working hours were provided by TDU.	5.20	2.49
10. I had sufficient time to teach my online course.	5.00	2.11
11. I had sufficient time to develop my online course.	4.70	1.89
12. Flexible working conditions were provided by TDU.	4.60	3.31
13. Sufficient technical expertise was provided by TDU.	4.40	3.27
14. Technical supports were provided by TDU.	4.20	2.82
15. Clerical supports were provided by TDU.	4.10	3.35
16. Overall instructors' perception of teaching online for TDU	5.70	2.00

Note. The scale of the answers is: 10 = Strongly Agree to 1 = Strongly Disagree

Qualitative Findings

1. Students.

The results for the three interview questions with fifteen students regarding students' perceptions of using ATutor are summarized as follows.

Question One: Did you have problems accessing to ATutor?

The themes that emerge from the data were login problem, download problem, and complicated thread.

1) Login Problem

Thirteen of fifteen students from three groups who participated in focus group interviews indicated that they had problems with ATutor's login. The login problems that they found were as follows.

- Difficult to login to ATutor courses, seven of fifteen students indicated that there were many reasons, such as the system was down, the university was updating system, and they accessed from low-speed internet.

- Two of fifteen students indicated that they forgot their login name and password.

- Four of fifteen students indicated that they needed to login several times before they would access ATutor.

2) Download Problem

Only three of five students from the second groups who were current master's program, second year indicated that they faced the download problem. The download problems that they found were as follows.

- Time consuming, three of five students indicated that the download problem resulted from many reasons such as the ATutor system itself and type of their internet connection, especially low-speed internet.

- Complicated steps, three of five students said that they had to do several steps to download files they need.

3) Complicated thread

Six of ten students from the first and the second groups of students indicated that they faced problems with the complicated thread. The complicated threads that they found are as follows.

- Complicated steps, six of ten students said that they needed to do several steps to access the content they want to learn.

- Difficult to find needed content, two of ten students said they needed to click several links to search for information they needed. Sometimes they could not find the content they need. They suggested that there should be the feature that provided a direct link to access their needed content.

- Different links lead to the same information, two of ten students said it confused them when they got the same information from different link instead of the new one.

Question Two: How did ATutor affect interactions with the instructor?

The themes that emerged from the data were Interact with instructor via ATutor, E-mail to instructor, and Telephone with instructor.

1) Interact with instructor via ATutor

Eight of fifteen students indicated that they found several problems from interaction via ATutor. Two of fifteen students indicated that they posted the questions on ATutor communication features but it took several days to get feedback from instructors. The problems are as follows.

- Receive late feedback via ATutor

- More complicate to communicate via ATutor than using the other communication channels such as e-mail and telephone.

Seven of fifteen students indicated that they prefer other ways to interact with the instructor such as e-mail and telephone.

2) E-mail to instructor

Five of fifteen students from all three groups indicated that they interacted with instructor by using an e-mail. All of them used their private e-mail to contact instructor because it was easy to use.

3) Telephone with instructor

Six of ten students from the second and third groups indicated that they prefer to use telephone to contact their instructor because it was fast and convenient to get answers or recommendations from instructors.

Question Three: How did ATutor affect your interaction with other students?

The themes that emerge from the data were Interact with other students via ATutor, e-mail and group mail, instant messaging, and telephone.

1) Interact with other students via ATutor

Four of ten students from the first and the second groups indicated that they used ATutor's communication features such as forums, groups, and chat to communicate with other students. Students indicated that there were several factors that motivated them to interact with other students via ATutor. These factors are as follows.

- The posted questions were interesting.

- They can share their ideas with other students.

- They can collaborate on their group homework.

- It is required by course.

- They can post questions or information they want to share with others.

2) E-mail and group mail

Seven of ten students from the first and the third groups indicated that they used their private e-mail to contact other students because it was easy to use. Five students form the third group said that their group has group mail and they used it for communication among the group members.

3) Instant messaging

Four of ten students from the first and the third groups indicated that some of their friends preferred using instant messaging such as MSN, Skype, and Facebook to contact each other.

4) Telephone

All the students from three groups indicated that they preferred to use telephone to contact their friends because it was a fast and convenient way to communicate with each other.

Summary Findings for Research Question 2

The findings indicated students and instructors' perception of using ATutor in terms of its usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, and self-directed learning can be summarized as follows.

1. Students' perception

1) Students' perception of the usefulness of ATutor features

The overall mean score of students' perception of the usefulness of ATutor features was ($M = 6.84$, $SD = 1.90$). The mean scores for all items in this cluster ranged from 6.31 to 7.40 out of 10 and standard deviations ranged from 1.78 to 2.19. Tests & surveys was highest average perceive score ($M = 7.40$, $SD = 1.93$).

2) Students' perception of the ease of use of ATutor features

The overall mean score of students' perception of ease of use of ATutor features was ($M = 7.37$, $SD = 1.71$). The mean scores for all items in this cluster ranged from 7.10 to 7.60 out of 10 and standard deviations ranged from 1.71 to 1.95. "ATutor system enabled me to learn the content as needed" was highest average perceive score ($M = 7.60$, $SD = 1.95$).

3) Students' perception of interaction and communication

The overall mean score of students' perception of interaction and communication was ($M = 7.33$, $SD = 1.78$). The mean scores for all items in this cluster ranged from 7.05 to 7.45 out of 10 and standard deviations ranged from 1.76 to 1.95. "ATutor system makes it easy for me to access the content" was highest average perceive score ($M = 7.45$, $SD = 1.82$).

4) Students' perception of e-learning andragogical design

The overall mean score of students' perception of e-learning andragogical design was ($M = 7.39$, $SD = 1.77$). The mean scores for all items in this cluster ranged from 7.07 to 7.62 out of 10 and standard deviations ranged from 1.71 to 2.04. "ATutor offers

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flexibility in learning as to time and place" was highest average perceive score (*M* = 7.62, *SD* = 1.97).

5) Students' perception of online learning

The overall mean score of students' perception of online learning was (*M* = 7.49, *SD* = 1.59). The mean scores for all items in this cluster ranged from 7.28 to 7.73 out of 10 and standard deviations ranged from 1.62 to 1.85. "I find ATutor courses useful for my learning" was highest average perceive score (*M* = 7.62, *SD* = 1.97).

6) Students' perception of Self-Directed Learning

The overall mean score of students' perception of Self-Directed Learning was (*M* = 7.33, *SD* = 1.47). The mean scores for all items in this cluster ranged from 7.14 to 7.42 out of 10 and standard deviations ranged from 1.47 to 1.66. "I have the ability to get assistance from various resources to discover new approaches to deal with learning problems" was highest average perceive score (*M* = 7.42, *SD* = 1.53).

2. Instructors' perception

1) Instructors' perception of the usefulness of ATutor features

The overall mean score of students' perception of the usefulness of ATutor features was (M = 7.40, SD = 1.35). The mean scores for all items in this cluster ranged from 7.25 to 9.00 out of 10 and standard deviations ranged from 0.69 to 2.17. Announcements was highest average perceive score (M = 9.00, SD = 1.41).

2) Instructors' perception of the ease of use of ATutor features

The overall mean score of instructors' perception of ease of use of ATutor features was (M = 7.10, SD = 1.37). The mean scores for all items in this cluster ranged

from 7.10 to 7.60 out of 10 and standard deviations ranged from 1.08 to 2.13. "ATutor system is user-friendly" was highest average perceive score (M = 7.60, SD = 1.08).

3) Instructors' perception of interaction and communication

The overall mean score of instructors' perception of interaction and communication was (M = 7.30, SD = 1.89). The mean scores for all items in this cluster ranged from 6.80 to 7.60 out of 10 and standard deviations ranged from 1.66 to 2.00. "I felt ATutor enhanced communication with students" was highest average perceive score (M = 7.60, SD = 1.96).

4) Instructors' perception of using ATutor

The overall mean score of instructors' perception of using ATutor was (M = 5.70, SD = 2.00). The mean scores for all items in this cluster ranged from 4.10 to 7.90 out of 10 and standard deviations ranged from 1.66 to 3.35. "Planning an online course takes much time" was highest average perceive score (M = 7.90, SD = 2.73).

Findings Related to Research Question 3

Research question three sought to determine if there was a relationship between students' perceptions of using ATutor including the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, and self-directed learning.

Quantitative Findings

The correlations among variables are given in Table 25. All six students' perception variables (constants) had positive correlation as follows. Usefulness

positively correlated with ease of use ($r = 0.770$, $p < 0.01$), interaction and communication ($r = 0.736$, $p < 0.01$), e-learning andragogical design ($r = 0.743$, $p < 0.01$), online learning ($r = 0.680$, $p < 0.01$), and Self-Directed Learning ($r = 0.640$, $p < 0.01$), respectively.

Ease of use positively correlated with interaction and communication ($r = 0.828$, $p < 0.01$), e-learning andragogical design ($r = 0.809$, $p < 0.01$), online learning ($r = 0.782$, $p < 0.01$), and Self-Directed Learning ($r = 0.647$, $p < 0.01$), respectively. Interaction and communication positively correlated with e-learning andragogical design ($r = 0.856$, $p < 0.01$), online learning ($r = 0.777$, $p < 0.01$), and Self-Directed Learning ($r = 0.674$, $p < 0.01$), respectively.

E-learning andragogical design positively correlated with online learning ($r = 0.862$, $p < 0.01$), and Self-Directed Learning ($r = 0.693$, $p < 0.01$), respectively. Also, online learning positively correlated with Self-Directed Learning ($r = 0.749$, $p < 0.01$).

Table 25

Correlation Coefficient for Students' Perceptions of Using ATutor (N=207)

Independent variable (Constant)	1	2	3	4	5	6
1. Usefulness		.770**	.736**	.743**	.680**	.640**
2. Ease of use			.828**	.809**	.782**	.647**
3. Interaction and communication				.856**	.777**	.674**
4. E-learning andragogical design					.862**	.693**
5. Online learning						.749**
6. Self-directed learning						

** Correlation is significant at the 0.01 level (2-tailed).

Summary Findings for Research Question 3

The findings indicated a relationship between students' perceptions of using ATutor including the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, and self-directed learning.

The results showed that all six students' perception variables (constants) including, usefulness, ease of use, interaction and communication, e-learning andragogical design, online learning, and Self-Directed Learning had positive and significant correlation.

Findings Related to Research Question 4

Research question four sought to determine if there was relationship between instructors' perceptions of using ATutor including the usefulness, ease of use, interaction and communication, and teaching online by using ATutor.

Quantitative Findings

The correlations among variables are reported in Table 26. All four students'
perception variables (constants) had positive correlation as follows. Usefulness
positively correlated with ease of use ($r = 0.817, p < 0.01$), interaction and
communication ($r = 0.819, p < 0.01$), using ATutor ($r = 0.912, p < 0.01$), respectively.

Ease of use positively correlated with interaction and communication ($r = 0.803, p
< 0.01$), using ATutor ($r = 0.822, p < 0.01$), respectively. Also, interaction and
communication positively correlated with using ATutor ($r = 0.761, p < 0.01$).

Table 26

Correlation Coefficient for Instructors' Perceptions of Using ATutor (N=207)

Independent variable (Constant)	1	2	3	4
1. Usefulness		.817**	.819**	.912**
2. Ease of use			.803**	.822**
3. Interaction and communication				.761*
4. Using ATutor				

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Summary Findings for Research Question 4

The findings indicated a relationship between instructors' perceptions of using
ATutor including the usefulness, ease of use, interaction and communication, and using
ATutor.

The results showed that all four instructors' perception variables (constants) including, usefulness, ease of use, interaction and communication, and Using ATutor had positive and significant correlation.

Findings Related to Research Question 5

Research question five sought to determine what the perceived benefits are and barriers to effectively disseminating ATutor in distance education at TDU.

Quantitative Findings

1. Perceived benefits to effectively disseminating ATutor in distance education.

There were four questions asked of students and instructors regarding perceived benefits to effectively disseminating ATutor in distance education. The respondents were asked to rank their perception regarding the first three important features of ATutor and what were the three most liked features of ATutor (See Table 27- Table 30).

1) The most important features of ATutor

Students and instructors were asked to rank their perception regarding the most important features of ATutor. There were 42 students (20.29%) and 8 instructors (80%) who provided the answers.

Data regarding the students and instructors' perception regarding the most important features of ATutor are summarized in Table 27. The results show that there were 54.8% of students indicated that *content navigation* was their most important ATutor features. While, 37.5% of instructors indicated that *announcement* is their most important ATutor features.

Table 27

Students and Instructors' Perception of the Most Important Features of ATutor (Students

N=42, Instructors N=8)

1st important features	Students		1st important features	Instructors	
	f	%		*f*	%
1. Content Navigation	23	54.8	1. Announcement	3	37.5
2. Test & Survey	4	9.5	2. Blogs	2	25.0
3. Forums	4	9.5	3. Content Navigation	1	12.5
4. Glossary	4	9.5	4. File Storage	1	12.5
5. User Online	2	4.8	5. Related Topics	1	12.5
6. My Tracker	2	4.8	Total	8	100.0
7. File storage	1	2.4			
8. Blogs	1	2.4			
9. Links	1	2.4			
Total	42	100.0			

2) The second most important features of ATutor

Students and instructors were asked to rank their perception regarding the second

most important features of ATutor. There were 37 students (17.87%) and 8 instructors

(80%) who provided the answers.

Data regarding the students and instructors' perception regarding the second most

important features of ATutor are summarized in Table 28. The results show that 32.4%

of students indicated that *test & survey* was their second most important ATutor features.

While, 25.0% of instructors indicated that *announcement* and *ACollab* were their second

most important ATutor features.

Table 28

Students and Instructors' Perception of the Second Most Important Features of ATutor

(Students N=37, Instructors N=8)

2nd important features	Students		2nd important features	Instructors	
	f	%		*f*	%
1. Test & Survey	12	32.4	1. Content Navigation	2	25.0
2. Links	4	10.8	2. ACollab	2	25.0
3. Content Navigation	3	8.1	3. Glossary	1	12.5
4. Chat	3	8.1	4. Group	1	12.5
5. Forums	3	8.1	5. Test&Survey	1	12.5
6. File storage	2	5.4	6. Export content	1	12.5
7. Site-map	2	5.4	Total	8	100.0
8. Export content	2	5.4			
9. Announcement	2	5.4			
10. Glossary	1	2.7			
11. Polls	1	2.7			
12. User Online	1	2.7			
13. Group	1	2.7			
Total	37	100.0			

3) The third most important features of ATutor

Students and instructors were asked to rank their perception regarding the third most important features of ATutor. There were 36 students (17.39%) and 7 instructors (70%) who provided the answers.

Data regarding the students and instructors' perception regarding the third most important features of ATutor are summarized in Table 29. The results show that 33.3% of students indicated that *export content* was their third most important ATutor features. While, 28.6% of instructors indicated that *announcement* and *blogs* were their third most important ATutor features.

Table 29

Students and Instructors' Perception of the Third Most Important Features of ATutor

(Students N=36, Instructors N=7)

3rd important features	Students f	Students %	3rd important features	Instructors f	Instructors %
1. Export content	12	33.3	1. Announcement	2	28.6
2. Announcement	4	11.1	2. Blogs	2	28.6
3. Chat	3	8.3	3. Links	1	14.3
4. Blogs	3	8.3	4. My Tracker	1	14.3
5. Forums	3	8.3	5. Group	1	14.3
6. FAQ	2	5.6	Total	7	100.0
7. File storage	2	5.6			
8. Test & Survey	2	5.6			
9. Directory	2	5.6			
10. My Tracker	1	2.8			
11. Group	1	2.8			
12. Links	1	2.8			
Total	36	100.0			

4) Most liked about ATutor

Students and instructors were asked what their three most liked features of ATutor. There were 28 students (13.53%) and 10 instructors (100%) who provided the answers.

Data regarding the students and instructors' perception their three most liked features of ATutor are summarized in Table 30. The results showed that students' three most liked about ATutor including *content navigation* (42.9%), *test & survey* (21.4%), *easy to find content* (14.3%), and *chat* (14.3%), respectively. While, instructors indicated that their three most liked about ATutor including *interaction* (40.0%), *multimedia content* (20.0%), *students easily understand and review content* (20.0%), respectively.

Table 30

Students and Instructors' Perception of the Most Liked About ATutor (Students N=28,

Instructors N=10)

Most liked about ATutor	Students		Most liked about ATutor	Instructors	
	f	%		*f*	%
1. Content Navigation	12	42.9	1. Interaction; Interaction	4	40.0
2. Test & Survey	6	21.4	2. Content; Multimedia	2	20.0
3. Easy to find content	4	14.3	3. Content; Students easily understand and review	2	20.0
4. Chat	4	14.3	4. Content; Easy to add	1	10.0
5. Blogs	3	10.7	5. Content; Related topics	1	10.0
6. Export Content	2	7.1	6. Interaction; Forums	1	10.0
7. Directory	2	7.1	7. Ease of use	1	10.0
8. File Storage	2	7.1			
9. Forums	2	7.1			
10. My Tracker	2	7.1			
11. Interaction with instructor	1	3.6			
12. Easy to access	1	3.6			
13. Free	1	3.6			
14. Glossary	1	3.6			
15. Forums	1	3.6			
16. Announcement	1	3.6			
17. User Online	1	3.6			
18. Links	1	3.6			

Note. *Percentages do not sum to 100 because respondents were able to select more than one answer.

Qualitative Findings

1. Students.

The results for one interview question regarding students' perceptions of benefits of ATutor in distance education are summarized as follows.

Question One: Which features of ATutor that you perceived it help you to learn best?

The themes that emerge from the data were Contents, Tests & Surveys, Link, and Communication features; Announcements, Blogs, Forums.

1) Contents

All students from three groups who participated in focus group interviews indicated that contents were helpful for them to learn. Several benefits of content were:

- Summarize important information from textbooks**.**

- Is easy to understand**.**

- Provided in multimedia formats including, video, audio, slide show, links, and texts; Portable Document Format (PDF) and Hypertext.

2) Tests & Surveys

Nine of ten students from the first and the third group indicated that tests & surveys were helpful for them to learn. Several benefits of tests & surveys were:

- Measure their knowledge gain after study in each unit.

- Review the important topics before taking final exam**.**

- Provide instant feedback, student got a score right after finishing the test.

- Study again when got low score.

3) Links

Three of five students from the second group indicated that links were helpful for them to learn. Several benefits of links were:

- Provide useful and up-to-date information for learning.

- Provide useful and up-to-date information for assignments and papers.

- Both instructor and student can suggest course links.

4) Communication features; Announcements, Blogs, Forums.

Seven of ten students from the first and the second group indicated that Communication features including Announcements, Blogs, and Forums were helpful for them to learn. Several benefits of Communication features were:

- Knowing course activities and schedule from announcements.

- Sharing opinion via Forums and Blogs.

- Sharing useful information via Blogs.

- Posting useful and interesting question via Forums. Other students can view and reply.

2. Instructors.

The results for one interview questions regarding instructors' perceptions of benefits of ATutor in distance education are summarized as follows.

Question One: What do you think are the greatest benefits of ATutor?

The themes that emerge from the data were Interaction, Flexibility, and Multimedia contents.

1) Interaction

All four instructors who participated in focus group interview indicated that interaction was one of three greatest benefits of ATutor. Several benefits from using ATutor for interaction were:

- Increase interaction between instructor and students**.**

- Increase interaction among students**.**

- Increase learning channel for students.

2) Flexibility

Two of four instructors who participated in focus group interview indicated that flexibility was one of three greatest benefits of ATutor. Several benefits from flexibilities of using ATutor were:

- Convenient and easy to post useful information.

- Easy to update information**.**

- Easy to provide extra contents or information after class meeting.

3) Multimedia contents

Three of four instructors who participated in focus group interview indicated that a multimedia content was the one of three greatest benefits of ATutor. Several benefits from using ATutor to provide multimedia contents were:

- Easy to understand content.

- More interesting than printed media**.**

- Students can review subject any time and any place they need.

2. Perceived barriers to effectively disseminating ATutor in distance education.

There were four questions asked of students and instructors regarding perceived barriers to effectively disseminating ATutor in distance education. The respondents were asked to rank their perception regarding the first three least important features of ATutor and what were their three least liked about ATutor? (Table 31- Table 34).

1) The least important features of ATutor

Students and instructors were asked to rank their perception regarding the least important features of ATutor. There were 32 students (15.46%) and 5 instructors (50%) who provided the answers.

Data regarding the students and instructors' perception regarding the least important features of ATutor are summarized in Table 31. The results show that there were 31.3% of students indicated that *Polls* was their least important ATutor features. While, 20.0 % of instructors indicated that *Site-map, Polls, Group, Blogs, and Related Topics* were their least important ATutor features.

Table 31

Students and Instructors' Perception of the Least Important Features of ATutor (Students N=32, Instructors N=5)

1st less important features	Students		1st less important features	Instructors	
	f	%		f	%
1. Polls	10	31.3	1. Site-map	1	20.0
2. Chat	4	12.5	2. Polls	1	20.0
3. My Tracker	3	9.4	3. Group	1	20.0
4. File Storage	3	9.4	4. Blogs	1	20.0
5. Related Topic	3	9.4	5. Related Topics	1	20.0
6. Announcements	2	6.3	Total	5	100.0
7. Acollab	1	3.1			
8. Content Navigation	1	3.1			

Table 31(Continued)

Students and Instructors' Perception of the Least Important Features of ATutor (Students

N=32, Instructors N=5)

	Students		1st less important features	Instructors	
1st less important features	f	%		f	%
9. FAQ	1	3.1			
10. Site-map	1	3.1			
11. User Online	1	3.1			
12. Blogs	1	3.1			
13. Forums	1	3.1			
Total	32	100.0			

2) The second least important features of ATutor

Students and instructors were asked to rank their perception regarding the second least important features of ATutor. There were 28 students (13.53%) and 5 instructors (50%) who provided the answers.

Data regarding the students and instructors' perception regarding the second least important features of ATutor are summarized in Table 32. The results show that there were 25.0% of students indicated that *Polls* was their second least important ATutor features. While, 20.0 % of instructors indicated that *Polls, Site-map, Glossary, TILE, and Forums* were their second least important ATutor features.

Table 32

Students and Instructors' Perception of the Second Least Important Features of ATutor

(Students N=28, Instructors N=5)

2nd less important features	Students		2nd less important features	Instructors	
	f	%		f	%
1. Polls	7	25.0	1. Polls	1	20.0
2. Acollab	4	14.3	2. Site-map	1	20.0
3. Glossary	4	14.3	3. Glossary	1	20.0
4. My Tracker	2	7.1	4. TILE	1	20.0
5. Blogs	2	7.1	5. Forums	1	20.0
6. Forums	2	7.1	Total	5	100.0
7. Chat	1	3.6			
8. Related Topic	1	3.6			
9. FAQ	1	3.6			
10. Announcements	1	3.6			
11. User Online	1	3.6			
12. Export Content	1	3.6			
13. Directory	1	3.6			
Total	28	100.0			

3) The third least important features of ATutor

Students and instructors were asked to rank their perception regarding the third least important features of ATutor. There were 28 students (13.53%) and 4 instructors (40%) who provided the answers.

Data regarding the students and instructors' perception regarding the third least important features of ATutor are summarized in Table 33. The results show that there were 14.3% of students indicated that *Polls and Related Topics* were their third least important ATutor features. While, 25.0 % of instructors indicated that *Chat, Blogs, Links, and Directory* were their third least important ATutor features.

Table 33

Students and Instructors' Perception of the Third Least Important Features of ATutor

(Students N=28, Instructors N=4)

3rd less important features	Students		3rd less important features	Instructors	
	f	%		*f*	%
1. Polls	4	14.3	1. Chat	1	25.0
2. Related Topics	4	14.3	2. Blogs	1	25.0
3. TILE	3	10.7	3. Links	1	25.0
4. Blogs	3	10.7	4. Directory	1	25.0
5. Acollab	2	7.1	Total	4	100.0
6. Directory	2	7.1			
7. My Tracker	2	7.1			
8. Link	1	3.6			
9. File Storage	1	3.6			
10. Export Content	1	3.6			
11. FAQ	1	3.6			
12. Site-map	1	3.6			
13. Glossary	1	3.6			
14. Forums	1	3.6			
15. Group	1	3.6			
Total	28	100.0			

4) Least liked about ATutor

Students and instructors were asked what are their three least liked about ATutor. There were 20 students (9.66%) and 10 instructors (100%) who provided the answers.

Data regarding the students and instructors' perception their three least liked about ATutor are summarized in Table 34. The results showed that students' three least liked about ATutor including *Polls* (30.0%), *Glossary* (15.0%), *Difficult to download* (10.0%), *ACollab* (10.0%), *Group* (10.0%), *Blogs* (10.0%), and *Chat* (10.0%), respectively. While, instructors indicated that their three least liked about ATutor

including *Time consuming; Production* (40.0%), *Time consuming; Upload-Download file* (20.0%), and *Interaction; with student and technician/supporters* (20.0%), respectively.

Table 34

Students and Instructors' Perception of the Least Liked About ATutor (Students N=20, Instructors N=10)

Least liked about ATutor	Students		Least liked about ATutor	Instructors	
	f	%*		*f*	%*
1. Polls	6	30.0	1. Time consuming; Production	4	40.0
2. Glossary	3	15.0	2. Time consuming; Upload-Download files	2	20.0
3. Difficult download	2	10.0	3. Interaction; with student , with technician/ supporters	2	20.0
4. ACollab	2	10.0	4. Asynchronous	1	10.0
5. Group	2	10.0	5. Blogs	1	10.0
6. Blogs	2	10.0	6. Links; Not provide useful link	1	10.0
7. chat	2	10.0	7. Budget; Spent more money	1	10.0
8. Needed enrolment to access	1	5.0			
9. Only a semester for Access	1	5.0			
10. Few ATutor course	1	5.0			
11. Announcements	1	5.0			
12. FAQ	1	5.0			
13. Reading List	1	5.0			
14. related Topics	1	5.0			
15. File Storage	1	5.0			
16. My Tracker	1	5.0			

Note. *Percentages do not sum to 100 because respondents were able to select more than one answer.

Qualitative Findings

1. Students.

The results for one interview questions regarding students' perceptions of barriers to effectively disseminating ATutor in distance education are summarized as follows. *Question One: Which features of ATutor that are not useful?*

All three groups of students who participated in focus group interviews indicated that all features of ATutor were useful. Even though, they said that they used only some features such as Contents and Tests & Surveys. Some students indicated that the reason why they did not use other features because they did not know how to use it. They said that if they know how to use it they would use those features.

The themes that emerge from the data was Frequently Asked Questions (FAQ)

1) Frequently Asked Questions (FAQ)

The first groups of students indicated that Frequently Asked Questions (FAQ) was not useful for them to learn. The reasons why the Frequently Asked Questions (FAQ) is not useful are as follows.

- This feature was not function in some course.

- The question and answer were not interesting and useful.

2. Instructors.

The results for the four interview questions regarding instructors' perceptions of barriers to effectively disseminating ATutor in distance education are summarized as follows.

Question One: What do you think are the greatest drawbacks of ATutor?

The themes that emerge from the data were System operations, Lack of technological skills, and few students accessing ATutor.

1) System operations

Instructors indicated that system operation is one of three greatest drawbacks from ATutor. Several problems with system operation are as follows.

- The system was not stable.

- It is difficult to access ATutor sometime.

- It is difficult to Access the content with low-speed internet.

- It is a time intensive for uploading and downloading information from ATutor.

2) Lack of technological skills

Instructors indicated that the lack of technological skills is one of three greatest drawbacks from ATutor. Several problems with the lack of technological skills are as follows.

- Both students and instructor lack of skills for using internet.

- Both students and instructor lack of skills for using ATutor.

3) Few students accessing ATutor

Instructors indicated that a low number of students accessing ATutor is one of three greatest drawbacks from ATutor. Several problems with few student accessing ATutor are as follows.

- Influence other students not to access ATutor.

- Students accessed ATutor only if it was the course requirement.

- Few students communicated via communication features.

Question Two: Aside from the technological aspects, has ATutor affected your teaching methods? In what ways?

The themes that emerge from the data were System operation and Time intensive.

1) System operations

Instructors indicated that system operation affected their teaching method as follows.

- Students from different assigned group could not collaborate with other students in different group.

2) Time intensive

Instructors indicated that time intensive affected their teaching method as follows.

- Time consuming for developing course contents and multimedia.
- Time management for developing course website.
- Time management for meeting between instructor and instructional designers or technician supporters.

Question Three: Have there been any issues that have developed while implementing ATutor?

The theme that emerges from the data was course management.

1) Course management

Instructors indicated that course management was the problem while implementing ATutor as follows.

- The university should assign instructional designers or technician supporters in each course earlier.

- The university should facilitate the meeting between instructors and instructional designers or technician supporters in order to develop the instructional development plan and timeline.

Question Four: Have there been any issues that have arisen while teaching via ATutor?

The themes that emerge from the data were System operation, Few students accessing ATutor, and Outdated information.

1) System operations

Instructors indicated that they faced with system operation problem while teaching via ATutor as follows.

- The system was down and unstable.

- They cloud not access ATutor before semester started or after semester ended.

2) Few students accessing ATutor

Instructors indicated that they were faced with low student accessing ATutor while teaching via ATutor. Some instructors suggested that the university should facilitate student to access ATutor , for example, provide ATutor orientation workshop online or face to face.

3) Outdated information

Instructors indicated that they were faced with outdated information while teaching via ATutor such as enrollment students name list and course schedule. Some instructors suggested that the university should provide information about enrollment students name list and course schedule before the semester started. Also, technician supporters should update course schedule and course information as soon as possible.

Summary Findings for Research Question 5

The findings indicated perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU.

1. Perceived benefits to effectively disseminating ATutor in distance education.

Quantitative findings

1) The Most important features of ATutor

The results show that the most important rank of ATutor features among students was *Content Navigation* (54.8%) and instructors' rank was *Announcement* (37.5%).

2) The second most important features of ATutor

The results show that the second most important rank of ATutor features among students was *Test & Survey* (32.4%) and instructors' rank were *Announcement* and *ACollab* (25.0%).

3) The third most important features of ATutor

The results show that the third most important rank of ATutor features among students was *Export content* (33.3%) and instructors' rank were *Announcement* and *Blogs* (28.6%).

4) Most liked about ATutor

The results showed that students' most liked about ATutor was *Content Navigation* (42.9%). While, instructors' most liked about ATutor was *Interaction* (40.0%).

Qualitative findings

1. Students.

1) Which features of ATutor that you perceived it help you to learn best?

The themes that emerge from the data were Contents, Tests & Surveys, Link, and Communication features; Announcements, Blogs, Forums.

2. Instructors.

1) What do you think are the greatest benefits of ATutor?

The themes that emerge from the data were Interaction, Flexibility, and Multimedia contents.

2. Perceived barriers to effectively disseminating ATutor in distance education.

Quantitative findings

1) The least important features of ATutor

The results show that the least important rank of ATutor features of students was *Polls* (31.3%) and instructors' rank were *Site-map, Polls, Group, Blogs*, and *Related Topics* (20.0%).

2) The second least important features of ATutor

The results show that the second least important rank of ATutor features of students was *Polls* (25.0%) and instructors' rank were *Polls, Site-map, Glossary, TILE*, and *Forums* (20.0%).

3) The third least important features of ATutor

The results show that the third least important rank of ATutor features of students were *Polls* and *Related Topics* (14.3%) and instructors' rank were *Chat, Blogs, Links*, and *Directory* (25.0%).

4) Least liked about ATutor

The results showed that students' least liked about ATutor was Polls (30.0%). While, instructors' least liked about ATutor wasTime consuming; Production (40.0%).

Qualitative Findings

1. Students.

1) Which features of ATutor that you perceived it not useful?

The themes that emerge from the data was *Frequently Asked Questions (FAQ).*

2. Instructors.

1) What do you think are the greatest drawbacks of ATutor?

The themes that emerge from the data were system operations, lack of technological skills, and low students accessing ATutor.

2) Aside from the technological aspects, has the ATutor affected your teaching methods? In what ways?

The themes that emerge from the data were system operation and time intensive.

3) Have there been any issues that have developed while implementing ATutor?

The theme that emerges from the data was course management.

4) Have there been any issues that have arisen while teaching via ATutor?

The themes that emerge from the data were system operation, low students accessing ATutor, and outdated information.

Findings Related to Research Question 6

Research question six sought to determine what features users would like to see added to or removed from ATutor as an open source software product.

Quantitative Findings

1. Features should be added to ATutor.

Students and instructors were asked which features should be added to ATutor (Table 35). There were 6 students (2.90%) and 5 instructors (50%) who provided the answers.

Data regarding the students and instructors' perception regarding the features should be added to ATutor are summarized in Table 35. The results show that 33.3% of students indicated that there was no features that should be add to ATutor because ATutor features now were adequate. Whereas, 33.3%, of students reported that ATutor

should add multimedia content features to ATutor, increase ATutor courses (16.7%), and

download tools (16.7%), respectively.

While, the instructors indicated that there were some features that should be

added to ATutor including, Online Conferencing (10.0%), Case study (10.0%), Picture

Upload Download Tools (10.0%). Whereas, 10.0% of instructors indicated that there was

no features should be add to ATutor because ATutor features now were adequate.

Table 35

Students' and Instructors' Perception of the Features should be Added to ATutor as an

Open Source Software Product (Students N=6, Instructors N=5)

	Students			Instructors	
Added features	*f*	%	Added features	*f*	%
1. No Added; ATotur now were adequate	2	33.3	1. Online conferencing	1	10.0
2. Multimedia content	2	33.3	2. Media; Case study	1	10.0
3. Increase ATutor courses	1	16.7	2. Media; Picture	1	10.0
4. Download tool	1	16.7	3. Upload Download; Tools	1	10.0
			4. None; ATutor now were adequate	1	10.0

Qualitative Findings

1. Students.

The results for the two interview questions regarding the features should be added

to ATutor are summarized as follows.

Question One: What features would you like to see added to ATutor?

The first group indicated that there were two features should be added to ATutor. First, Videos or movies uploading. Students suggested that it would be very helpful if instructors or the other students can upload video that related to subjects because they can receive new and variety information that help them better understanding the content. Second, Discussion board. Students mentioned that they would like to see discussion board added to ATutor. Although ATutor has Forum feature for all students who enrolled in the course to post and reply questions, most of students had never used the Forum because they felt that those questions were academic questions. They would like to use discussion board features for posting their opinion, news and group activities, and discussion with other students.

The second group indicated that there were two features should be added to ATutor and one feature should be function. First, Help or ATutor manual, students said that this features will be useful for students who overwhelming with using ATutor and will motivate students to increase the use of ATutor. Second, Links, students suggested that both instructors and students should functions the Links. Links posted will be helpful for their papers and provide variety sources of useful information.

The third group indicated that there was one feature should be added to ATutor. Students indicated that they would like to see video conference features added to ATutor. The video functions should allow many students participated in each conference.

Question Two: What type of media do you prefer to learn most?

The first group of students indicated that they prefer to learn from both multimedia and printed material. The second group of students indicated that they prefer

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to learn from audio because they can listen to the audio while they are working. The third group of students indicated that they prefer to learn from multimedia because it helpful for understanding content clearly.

2. Instructors.

The results for the one interview questions regarding the features should be added to ATutor are summarized as follows.

Question One: What features would you like to see added to ATutor?

Instructors indicated that they would like to see video conference features added to ATutor. The video functions should allow many students to participate in each conference.

2. Features should be removed from ATutor.

Students and instructors were asked to which features should be removed from ATutor (Table 36). There were 17 students (8.21%) and 4 instructors (40%) who provided the answers.

Data regarding the students and instructors' perception regarding features should be removed from ATutor are summarized in Table 36. The results show that 35.3% of students indicated that there was no features that should be removed from ATutor because ATutor features now were adequate. Whereas, 23.5%, of students reported that should removed Polls features to ATutor. The other features should be removed from including ACollab (11.8%), and FAQ (11.8%), respectively.

While, 30.0% of instructors indicated that there was no features that should be removed from ATutor because ATutor features now were adequate. Whereas, 10.0% of instructors indicated that the features should be removed from ATutor was Blogs.

Table 36

Students' and Instructors' Perception of the Features that should be Removed from ATutor as an Open Source Software Product (Students N=17, Instructors N=4)

Removed features	Students		Removed features	Instructors	
	f	%*		*f*	%*
1. None Removed; ATutor now were adequate	6	35.3	1. None; Should use all features	3	30.0
				1	10.0
			2. Blogs		
2. Pools	4	23.5			
3. Acollab	2	11.8			
4. FAQ	2	11.8			
5. Chat	1	5.9			
6. Blogs	1	5.9			
7. File Storage	1	5.9			
8. My Tracker	1	5.9			
9. Related Topics	1	5.9			
10. Glossary	1	5.9			
11. TILE	1	5.9			
12. Forums	1	5.9			
13. Site-map	1	5.9			
14. Group	1	5.9			

Note. *Percentages do not sum to 100 because respondents were able to select more than one answer.

Qualitative Findings

1. Students.

The results for the one interview questions regarding the features should be removed from ATutor are summarized as follows.

Question One: What features would you like to see removed from ATutor?

The first group indicated that there were two features should be removed from ATutor. First, Reading List, students said that the Reading List features should be removed if it was not function in course website. Second, Frequently Asked Questions (FAQ), students mentioned that FAQ features should be removed from ATutor if it was not function in course website.

The second and third group of students indicated that there were no features that should be removed from ATutor because each feature was useful for distance students. By the way, they suggested that instructors and instructional designers should employ all features.

2. Instructors.

The results for the one interview question regarding which features should be removed from ATutor are summarized as follows.

Question One: What features would you like to see removed from ATutor?

Instructors indicated that there were no features that should be removed from ATutor because each feature was useful for students. By the way, they suggested that instructors and instructional designers should employ all features.

Summary Findings for Research Question 6

The findings indicated what features would users like to see added to or removed from ATutor as an open source software product.

1. Features should be added to ATutor.

Quantitative findings

The results show that 33.3% of students indicated that there were no features that should be add to ATutor because ATutor features now were adequate. Whereas, 33.3%, of students suggested adding multimedia content features to ATutor. While, the instructors indicated that there were some features that should be added to ATutor including, Online (10.0%), Conferencing (10.0%), Case study(10.0%), Picture Upload Download Tools (10.0%). Whereas, 10.0% of instructors indicated that there were no features that should be add to ATutor because ATutor features now were adequate.

Qualitative findings

1. Students.

1) What features would you like to see added to ATutor?

The first group indicated that there were two features should be added to ATutor including Videos or movies uploading and Discussion board. The second group indicated that there were two features should be added to ATutor including Help or ATutor manual and Links. The third group indicated that video conference was one feature should be added to ATutor.

2) What type of media do you prefer to learn most?

The first group of students indicated that they prefer to learn from both multimedia and printed material. The second group of students indicated that they prefer

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to learn from audio. The third group of students indicated that they prefer to learn from multimedia.

2. Instructors.

1) What features would you like to see added to ATutor?

Instructors indicated that they would like to see video conference features added to ATutor.

2. Features should be removed from ATutor.

Quantitative findings

The results show that 35.3% of students indicated that there were no features that should be removed from ATutor and 23.5%, of students reported that Polls should be removed from ATutor. While, 30.0% of instructors indicated that there were no features that should be removed from ATutor and 10.0% of instructors indicated that the features should be removed from ATutor was Blogs.

Qualitative findings

1. Students.

1) What features would you like to see removed from ATutor?

The first group indicated that there were three features that should be removed from ATutor including Reading List and Frequently Asked Questions (FAQ). The second and

third group of students indicated that there were no features that should be removed from ATutor.

2. Instructors.

1) What features would you like to see removed from ATutor?

Instructors indicated that there were no features that should be removed from ATutor.

Findings Related to Research Question 7

Research question seven sought to determine if ATutor supported or detracted from self-directed learning?

Qualitative Findings

The results for the two interview questions regarding does ATutor support or detract from Self-Directed Learning are summarized as follows.

Question One: Does ATutor support Self-directed learning?

The themes that emerged from the data were ability to set an appropriate pace for learning and ability to get assistance from various resources.

1) Ability to set an appropriate pace for learning

All three groups of students who participated in focus group interviews indicated that ATutor supported their ability to set an appropriate pace for learning as follows.

- Students were able to choose topics they wanted to learn first or later.

- Students were able to set their schedule to completed course contents.

- Students were able to set appropriate time for completing test in each unit.

2) Ability to get assistance from various resources

All three groups of students who participated in focus group interviews indicated that ATutor support their ability to get assistance from various resources as follows.

- Students were able to find various resources from provided links and communication features in order to discover new means to deal with learning problems.

- Students were able to find useful information from various sources and share with others.

Question Two: Does ATutor detract from Self-directed learning?

The theme that emerged from the data was course schedule and technological problem.

1) Course schedule

All three groups of students who participated in focus group interviews indicated that the course schedule on ATutor detracted from self-directed learning as follows.

- Students had to submit assignment the scheduled time. Thus they need to study the topics that have assignments first instead the topics they prefer to study.

- Student could not access course website before or after each semester started or ended.

2) Technological problem

All three groups of students who participated in focus group interviews indicated that the problem from internet accessing ATutor detract from Self-directed learning as follows.

- Internet access problem, students who had low speed internet face difficulty to access ATutor.

- Student could not access to some course contents and multimedia information because their computer competency.

Summary Findings for Research Question 7

The findings indicated does ATutor support or detract from Self-Directed Learning.

Qualitative findings

1) Does ATutor support Self-directed learning?

The themes that emerged from the data were ability to set an appropriate pace for learning and ability to get assistance from various resources.

2) Does ATutor detract from Self-directed learning?

The theme that emerged from the data was course schedule and technological problem.

Findings Related to Research Question 8

Research question eight sought to determine students and instructors' suggestions in order to improve ATutor in distance education.

1. Students.

The results for the three interview questions regarding students' suggestions to improve ATutor in distance education are summarized as follows.

Question One: In your opinion, should the university require all online courses to be delivering using ATutor why or why not?

The theme that emerged from the data was the university should deliver all online courses using ATutor.

1) Deliver all online courses using ATutor

All three groups of students who participated in focus group interviews indicated that TDU should deliver all online courses using ATutor as follows.

- Students were familiar with ATutor features.

- Students perceived that ATutor was helpful, allow them to access contents any time they need, and help them understand content better than study from textbooks only.

Question Two: What would you suggest to improve ATutor?

The themes that emerged from the data were Orientation workshop, System operation, and Course design.

1) Orientation workshop

All three groups of students who participated in focus group interviews indicated that university should improve orientation workshop as follows.

- University should arrange face to face workshop for using ATutor during orientation days. This workshop should take three hours.

- University should provide online workshop for using ATutor because all students can access the workshop and review how to use ATutor anytime they need.

- University should provide ATutor user manual in variety formats such as electronic file and printed material.

2) System operation

The second and third group of students who participated in focus group interviews indicated that university should improve ATutor system operation as follows.

- Improve login problem

- Maintain system operation's stability.

- Make login easy, access course website, and download.

3) Course design

The second and third groups of students who participated in focus group interviews indicated that university should improve course design as follows.

- To improve course design and made course website more interesting such as themes, fronts, colors, and graphics.

- Use meaningful icon for each feature.

- Provide Thai language under each icon.

- Each icon should have instant message for guiding when the user click the right button on the mouse.

Question Three: What other thoughts, feelings, or questions do you have about learning online by use ATutor?

The themes that emerged from the data were Motivate student to use ATutor, System operation, and Increase ATutor courses.

1) Motivate student to use ATutor.

All groups of students who participated in focus group interviews indicated that university should motivate student to use ATutor as follows.

- Make system operation easy to login, access course website, and download.

- Provide orientation workshop for using ATutor.

- Frequently update course information.

- Motivate students using communication features.

2) System operation

The first and second group of students who participated in focus group interviews indicated that university should improve ATutor system operation such as make easy to login, access course website, and download.

3) Increase ATutor courses

The second group of students who participated in focus group interviews indicated that university should provide ATutor for all courses because it helpful for learning.

2. Instructors.

The results for the three interview questions regarding instructors' suggestions to improve ATutor in distance education are summarized as follows.

Question One: In your opinion, should the university require all online courses to be delivering using ATutor why or why not?

Instructors who participated in focus group interviews indicated that university should provide all graduate courses via online. Instructors also mentioned that besides using ATutor as Learning Course Management System (LCMS) to deliver online courses the university should use other appropriate LCMS such as Designing4Learning +Portfolio (D4LP).

Question Two: What would you suggest to improve ATutor?

The themes that emerged from the data were Make ATutor available at anytime and Arrange time to interact with students.

1) Make ATutor available at anytime

Instructors indicated that university should make ATutor available at anytime. Students could access ATutor anytime, not only whether class is in session.

2) Arrange time to interact with students

Instructors indicated that they should arrange their time to interact with students such as set up date for real time chat or video conference. It would be one method to motivate both instructors and students to interact with each other.

Question Three: What other thoughts, feelings, or questions do you have about learning online by use ATutor?

The themes that emerged from the data were System operation, Increase technological skills, Improve course management system, and Evaluate ATutor courses.

1) System operation

Instructors indicated that university should improve system operation as follows.

- Allow students to access ATutor courses anytime during they were students.

- Allow people to access ATutor courses as the guess.

- Inform students about started and ended date to access ATutor.

- Ensure that the system is secured especially about students' information and testing system.

2) Increase technological skills

Instructors indicated that they should increase their technological skills as follows.

- Instructors should continue to develop their abilities to use internet.

- Instructors should continue to develop their ability to use ATutor.

3) Improve course management system

Instructors indicated that university should improve course management system as follows.

- University should facilitate action plan between instructors and instructional designers or technician supporters.

- University should provide online workshop about using ATutor for instructors, instructional designers or technician supporters, and students.

4) Evaluate ATutor courses

Instructors indicated that university should Evaluate ATutor course as follows.

- University should facilitate ATutor course evaluation especially interaction between instructors and students and interaction among students.

Summary Findings for Research Question 8

The findings reported students' and instructors' suggestions for improving ATutor at TDU.

Qualitative findings

1. Students.

1) In your opinion, should the university require all online courses to be delivering using ATutor why or why not?

The theme that emerged from the data was the university should delivery all online courses by using ATutor.

2) What would you suggest to improve ATutor?

The themes that emerged from the data were Orientation workshop, System operation, and Course design.

3) What other thoughts, feelings, or questions do you have about learning online by use ATutor?

The themes that emerged from the data were Motivate student to use ATutor, System operation, and Increase ATutor courses.

2. Instructors.

1) In your opinion, should the university require all online courses to be

delivering using ATutor why? or why not?

Instructors who participated in focus group interviews indicated that university

should provide all graduate courses via online.

2) What would you suggest to improve ATutor?

The themes that emerged from the data were Make ATutor available at anytime

and Arrange time to interact with students.

3) What other thoughts, feelings, or questions do you have about learning online

by use ATutor?

The themes that emerged from the data were System operation, Increase

technological skills, Improve course management system, and Evaluate ATutor courses.

Chapter Summary

This chapter focuses on the findings of this study. The population for survey

method included 222 graduate students and 10 instructors from Thailand Distance

University (TDU). There were 207 students and 10 instructors who responded surveys.

Of 222 students, 207 completed the survey for a response rate of 93.24 percent. For

instructors, the response rate was 100 percent. The population for focus group interviews

(N=19) included 15 graduate students and 4 instructors and the response rate for focus

group interviews was 100 percent.

Findings Related to Research Question 1

The findings indicated students and instructors' demographics and characteristics that associated with their perception of using ATutor can be summarized as follows.

1. Students' demographics and characteristics

Most students who participated in the studey were female (51.7%), ages between 41-50 years (34.8%). Students indicated that they had internet at home (77.8%), use Hi-speed internet at home (49.3%), access ATutor at the office (51.2%), use Hi-speed at office (55.6%), spent two hours or less in each week for online (69.6%), access ATutor one time in each week (44.0%). Most of students feel comfortable using a computer (91.3%) and ATutor (83.5%).

2. Instructors' demographics and characteristics

Most instructors were female (60.0%), age between 51-60 years (70.0%), teaching experience at TDU was between 21-30 years (70.0%). Instructors indicated that they had internet access at home (70%), use Hi-speed internet at home (60.0%), access ATutor at the office (60.0%), had online teaching experience for four semesters or more (50.0%), had role as co-instructor (80.0%). Instructors indicated that they spent three hours or less in online activities in each week (80.0%), sent students e-mail one time and four or more time in each week (30.0%), and access to ATutor less than one time in each week (40.0%). Instructor indicated that they had participated in the following communication tools less than one time in each week, chat (90.0%), group forum (70.0%), and forum (60.0%). Instructor also indicated that TDU provide a good support for online teaching

(50.0%), attend ATutor workshop two times (40.0%), and would recommend ATutor to their colleague (80.0%).

3. Students' demographics and characteristics associated with their perception of using ATutor

The results show that there were five students' demographic variable had significant and positive correlation with students' perceptions of using ATutor including gender, comfort with using the computer, comfort with using ATutor, time spent online each week, and how often they accessed ATutor each week. While, there were five students' demographic variable had significant and negative correlation with students' perceptions of using ATutor including age, home internet access, place to access course website, home internet connection, and work internet connection.

4. Instructors' demographics and characteristics associated with their perception of using ATutor

The results show that there were five instructors' demographic variable had significant and positive correlation with students' perceptions of using ATutor including e-mailing students each week, chat participated in each week, forum participated in each week, group forum participated in each week, and ATutor satisfaction. While, there were four nstructors' demographic variable had significant and negative correlation with students' perceptions of using ATutor online teaching experience, role as instructor in teaching via ATutor, support from TDU, and ATutor workshop attended.

Findings Related to Research Question 2

The findings indicated students and instructors' perception of using ATutor in terms of its usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, and Self-Directed Learning can be summarized as follows.

1. Students' perception

The overall mean score of students' perception of the usefulness of ATutor features was (M = 6.84, SD = 1.90). The overall mean score of students' perception of ease of use of ATutor features was (M = 7.37, SD = 1.71). The overall mean score of students' perception of interaction and communication was (M = 7.33, SD = 1.78). The overall mean score of students' perception of e-learning andragogical design was (M = 7.39, SD = 1.77). The overall mean score of students' perception of online learning was (M = 7.49, SD = 1.59). The overall mean score of students' perception of Self-Directed Learning was (M = 7.33, SD = 1.47).

2. Instructors' perception

The overall mean score of students' perception of the usefulness of ATutor features was (M = 7.40, SD = 1.35). The overall mean score of instructors' perception of ease of use of ATutor features was (M = 7.10, SD = 1.37). The overall mean score of instructors' perception of interaction and communication was (M = 7.30, SD = 1.89).

The overall mean score of instructors' perception of using ATutor was (M = 5.70, SD = 2.00).

Findings Related to Research Question 3

The findings indicated a relationship between six students' perceptions of using ATutor including the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, and self-directed learning. The results showed that all six students' perception variables (constants) had positive and significant correlation.

Findings Related to Research Question 4

The findings indicated a relationship between four instructors' perceptions of using ATutor including the usefulness, ease of use, interaction and communication, and using ATutor. The results showed that all four instructors' perception variables (constants) had positive and significant correlation.

Findings Related to Research Question 5

The findings indicated what are the perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU.

1. Perceived benefits to effectively disseminating ATutor in distance education.

Quantitative findings.

The results show that the most important rank of ATutor features of students was Content Navigation (54.8%) and instructors' rank was Announcement (37.5%). The second most important rank of ATutor features of students was Test & Survey (32.4%) and instructors' rank were Announcement and ACollab (25.0%). The third most important rank of ATutor features of students was Export content (33.3%) and instructors' rank were Announcement and Blogs (28.6%). Students' most liked about ATutor was Navigation (42.9%). While, instructors' most liked about ATutor was Interaction (40.0%).

Qualitative findings.

1. Students.

1) Which features of ATutor that you perceived it help you to learn best?

The themes that emerged from the data were Contents, Tests & Surveys, Link, and Communication features; Announcements, Blogs, Forums.

2. Instructors.

1) What do you think are the greatest benefits of ATutor?

The themes that emerged from the data were Interaction, Flexibility, and Multimedia contents.

2. Perceived barriers to effectively disseminating ATutor in distance education.

Quantitative findings.

The results show that the least important rank of ATutor features of students was Polls (31.3%) and instructors' rank were Site-map, Polls, Group, Blogs, and Related Topics (20.0%). The second least important rank of ATutor features of students was Polls (25.0%) and instructors' rank were Polls, Site-map, Glossary, TILE, and Forums (20.0%). The third least important features of ATutor features of students were Polls and Related Topics (14.3%) and instructors' rank were Chat, Blogs, Links, and Directory (25.0%). Students' least liked about ATutor was Polls (30.0%). While, instructors' least liked about ATutor was Time consuming; Production (40.0%).

Qualitative findings.

1. Students.

1) Which features of ATutor that you perceived it not useful?

The themes that emerged from the data was Frequently Asked Questions (FAQ)

2. Instructors.

1) What do you think are the greatest drawbacks of ATutor?

The themes that emerged from the data were System operations, Lack of technological skills, and few students accessing ATutor.

2) Aside from the technological aspects, has the ATutor affected your teaching methods? In what ways?

The themes that emerged from the data were System operation and Time intensive.

3) Have there been any issues that have developed while implementing ATutor?

The theme that emerged from the data was course management.

4) Have there been any issues that have arisen while teaching via ATutor?

The themes that emerged from the data were System operation, Few students accessing ATutor, and Outdated information.

Findings Related to Research Question 6

The findings indicated what features would users like to see added to or removed from ATutor as an open source software product.

1. Features should be added to ATutor.

Quantitative findings.

The results show that 33.3% of students indicated that there were no features that should be add to ATutor because ATutor features now were adequate. Whereas, 33.3%, of students reported that multimedia should be add content to ATutor. While, the instructors indicated that there were some features that should be added to ATutor including, Online (10.0%), Conferencing (10.0%), Case study(10.0%), Picture Upload Download Tools (10.0%). Whereas, 10.0% of instructors indicated that there were no features that should be add to ATutor because ATutor features now were adequate.

Qualitative findings.

1. Students.

1) What features would you like to see added to ATutor?

The first group indicated that there were two features that should be added to ATutor including Videos or movies uploading and Discussion board. The second group indicated that there were two features that should be added to ATutor including Help or ATutor manual and Links. The third group indicated that video conference was one feature that should be added to ATutor.

2) What type of media do you prefer to learn most?

The first group of students indicated that they prefer to learn from both multimedia and printed material. The second group of students indicated that they prefer to learn from audio. The third group of students indicated that they prefer to learn from multimedia.

2. Instructors.

1) What features would you like to see added to ATutor?

Instructors indicated that they would like to see video conference features added to ATutor.

2. Features should be removed from ATutor.

Quantitative findings.

The results show that 35.3% of students indicated that there were no features that should be removed from ATutor and 23.5%, of students reported that should removed Polls features from ATutor. While, 30.0% of instructors indicated that there were no features that should be removed from ATutor and 10.0% of instructors indicated that the features should be removed from ATutor was Blogs.

Qualitative findings

1. Students.

1) What features would you like to see removed from ATutor?

The first group indicated that there were three features that should be removed from ATutor including Reading List and Frequently Asked Questions (FAQ). The second and third group of students indicated that there were no features that should be removed from ATutor.

2. Instructors.

1) What features would you like to see removed from ATutor?

Instructors indicated that there were no features that should be removed from ATutor.

Findings Related to Research Question 7

The findings indicated does ATutor support or detract from self-directed learning.

Qualitative findings.

1) Does ATutor support Self-directed learning?

The themes that emerged from the data were ability to set an appropriate pace for learning and ability to get assistance from various resources.

2) Does ATutor detract from Self-directed learning?

The theme that emerged from the data was course schedule and technological problem.

Findings Related to Research Question 8

The findings indicated that what students' and instructors' suggestions are to improve ATutor in distance education.

Qualitative Findings

1. Students.

1) In your opinion, should the university require all online courses to be delivering using ATutor why or why not?

The theme that emerged from the data was the university should delivery all online courses by using ATutor.

2) What would you suggest to improve using ATutor?

The themes that emerged from the data were Orientation workshop, System operation, and Course design.

3) What other thoughts, feelings, or questions do you have about learning online by use ATutor?

The themes that emerged from the data were Motivate student to use ATutor, System operation, and Increase ATutor courses.

2. Instructors.

1) In your opinion, should the university require all online courses to be delivering using ATutor why or why not?

Instructors who participated in focus group interviews indicated that university should provide all graduate courses via online. Instructors also mentioned that besides using ATutor as Learning Course Management System (LCMS) to deliver those online courses the university should also use other appropriate LCMS such as Designing4Learning +Portfolio (D4LP).

2) What would you suggest to improve ATutor?

The themes that emerged from the data were Make ATutor available at anytime and Arrange time to interact with students.

3) What other thoughts, feelings, or questions do you have about learning online by use ATutor?

The themes that emerged from the data were System operation, Increase technological skills, Improve course management system, and Evaluate ATutor courses.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION & RECOMMENDATIONS

This chapter provides a summary of the study including; purpose, research

questions, population, research design, data collection and analysis procedures. The

major findings of the study are presented. The conclusions and discussion about

educational significance of the study are explored. Recommendations for practice and

future research also are provided in this chapter.

Summary of the Study

In support of the information communication technology (ICT) Master Plan, in

2004 Thailand Distance University (TDU) implemented an e-learning program and

established a new strategy to become an e-university. In 2005, the university's School of

Agricultural Extension pioneered e-learning in four graduate-level courses using ATutor

as the Learning Content Management System (LCMS) platform. The use of ATutor as a

supplemental Web Based Instruction (WBI) aims to help students as a study aid, increase

interaction between students and instructors, and enhance students' abilities to pursue

knowledge from various electronic sources. In addition, teachers are able to create and

develop web-based course content using ATutor. The program also allows instructors to interact with students and track student performance electronically.

In the near future, TDU will encourage instructors to use e-learning to supplement print-based media in all courses using ATutor as the LCMS platform. Therefore, it is important that the academic community understand how students and instructors perceive the ATutor interface as a LCMS.

The need for this study stems from the lack of research regarding students' and instructors' perceptions of e-learning using open-source software. This research is designed to help decision makers understand the best practices of using ATutor as a LCMS for supplemental WBI in a distance learning system.

The purpose of this study is to examine students' and instructors' perceptions of using ATutor as the LCMS in e-learning courses at a distance university in Thailand.

Research Questions

The following research questions were set to achieve the purpose of this study:

1. What demographic variables were associated with students' and instructors' perceptions of using ATutor?

2. What were students' and instructors' perceptions of using ATutor as a LCMS?

What did users perceive in terms of: 1) Usefulness, 2) Ease of use, 3) Interaction and communication, 4) E-learning andragogical design, 5) Perception of online learning, 6) Self-Directed Learning, and 7) Perception of using ATutor

3. Was there a relationship between the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, self-directed learning and students' perceptions of using ATutor?

4. Was there a relationship between the usefulness, ease of use, interaction and communication, and teaching online by using ATutor and instructors' perceptions of using ATutor?

5. What were the perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU?

6. What features would users like to see added or removed from ATutor as an open source software product?

7. Did ATutor support or detract from self-directed learning?

8. What were students and instructors' suggestions for improving ATutor at TDU?

Population and Response Rate

The population of this study was composed of all graduate students and instructors from the School of Agricultural Extension, Thailand Distance University from the second semester of 2010 academic year. There were 222 graduate students and 10 instructors. The population for focus group interviews included 15 graduate students and 4 instructors.

There were 207 students and 10 instructors who responded to the surveys. Of 222 students, 207 completed the survey for a response rate of 93.24 percent. For instructors,

the response rate was 100 percent. The response rate for focus group interviews was 100 percent for both students and instructor group.

Research Design

This study used triangulation mixed-methods research design combining both quantitative and qualitative methods (Creswell, 2008). The researcher implemented quantitative and qualitative methods simultaneously with equal weight for each method during the study (Creswell & Clark, 2007).

Data Collection Procedures

Data collection began January 9, 2010, and ended February 24, 2010, for a total collection time of seven weeks.

Survey Administration.

Initially, the researcher provided an explanation of the study and invitation to participate to both students and instructors by face-to-face with the researcher. Then, the researcher delivered a survey instruments package that included the following: a cover letter (see Appendix C) explaining the purpose of the study, and a survey instrument for students (see Appendix D) or instructors (see Appendix E).

The researcher distributed the survey instrument package to participants and recollected it as the schedule follows.

1. Students: cohort#1, delivered survey packages on January 9, 2010 and collected on January 10, 2010.

2. Students: cohort#2, delivered survey packages on January 22, 2010 and collected on January 23, 2010.

3. Students: cohort# 3, delivered survey packages on January 14, 2010 and collected it back on January 14, 2010.

4. Instructors, delivered survey packages on January 19, 2010 and collected it back on January 26, 2010.

For absent students, the researcher delivered 23 survey instrument packages with a postage paid return envelope via mail to potential student respondents who were absent during the three interactive activities. A follow-up package was sent two weeks later to non-respondents as suggested by Dilman's (2007) tailored design survey method. However, only eight of the potential student participants (34.78%) who were mailed survey instruments returned.

Focus Group Interview Administration.

Initially, the researcher provided an explanation of the study and the focus group interview to the research assistant. To conduct the focus group interview, the researcher provided an explanation of the study and invitation to participate to both students and instructors. Then, the researcher and the research assistant delivered the participant consent form (see Appendix B) and conducted focus group interviews with students and instructors as follows.

1. Students: cohort#1, performed focus group interview on January 9, 2010.

2. Students; cohort#2, performed focus group interview on January 22, 2010.

3. Students; cohort#3, performed focus group interview on January 13, 2010.

4. Instructors, performed focus group interview on January 22, 2010.

Data Analyses Procedures

Both the quantitative and qualitative data were triangulated, interpreted, and analyzed to determine whether the different data sets support or contradict each other. Descriptive statistics such as mean, mode, median, and standard deviations were used to calculate demographic variables and students' and instructors' perceptions on the selected constructs. The Pearson Product Moment Correlation Coefficient was used to examine the relationship between demographic variables and selected constructs.

The data from open-ended survey questions and the focus group interviews was organized and analyzed using Microsoft Office Excel. Both the qualitative and quantitative data sets were organized, analyzed, and reported following Hennink's process of data analysis for focus group research including data preparation, identifying themes in the data, labeling data by themes, and using the framework for analysis (Hennink, 2007).

Major Findings

Table 37

Research Questions and Major Findings

Research Question	Major Finding
1. What demographic variables were associated with students' and instructors' perceptions of using ATutor?	• Gender, comfortable using a computer, comfortable using ATutor, time spent online each week, and how often to access to ATutor each week had significant and positive correlation with students' perceptions of using ATutor. • Age, home internet access, place to access course website, home internet connection, and work internet connection had significant and negative correlation with students' perceptions of using ATutor. • E-mail student each week, chat participated each week, forum participated each week, group forum participated each week, and ATutor satisfaction had significant and positive correlation with instructors' perceptions of using ATutor. • Online teaching experience, role as instructor in teaching via ATutor, support from TDU, and ATutor workshop attended had significant and negative correlation with instructors' perceptions of using ATutor.
2. What were students' and instructors' perceptions of using ATutor as a LCMS? What did users perceive in terms of: 1) Usefulness 2) Ease of use 3) Interaction and communication 4) E-learning andragogical design 5) Perception of online learning	• The overall mean score of students' perception of the usefulness of ATutor features was ($M = 6.84$, $SD = 1.90$). Tests & Surveys was highest average perceive score ($M = 7.40$, $SD = 1.93$). • The overall mean score of students' perception of ease of use of ATutor features was ($M = 7.37$, $SD = 1.71$). ATutor system enable me to learn the content as needed was highest average perceive score ($M = 7.60$, $SD = 1.95$). • The overall mean score of students' perception of interaction and communication was ($M = 7.33$, $SD = 1.78$). ATutor system makes it easy for me to access the content was highest average perceive score ($M = 7.45$, $SD = 1.82$).

Table 37 (Continued)

Research Questions and Major Findings

Research Question	Major Finding
6) Self-Directed Learning 7) Using ATutor	• The overall mean score of students' perception of e-learning andragogical design was ($M = 7.39$, $SD = 1.77$). ATutor offers flexibility in learning as to time and place was highest average perceive score ($M = 7.62$, $SD = 1.97$). • The overall mean score of students' perception of online learning was ($M = 7.49$, $SD = 1.59$). I find ATutor courses useful for my learning was highest average perceive score ($M = 7.62$, $SD = 1.97$). • The overall mean score of students' perception of Self-Directed Learning was ($M = 7.33$, $SD = 1.47$). I have the ability to get assistance from various resources to discover new approaches to deal with learning problems was highest average perceive score ($M = 7.42$, $SD = 1.53$).
3. Was there a relationship between students' perceptions of using ATutor including the usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, and self-directed learning?	• The results showed that all six students' perception variables (constants) including, usefulness, ease of use, interaction and communication, e-learning andragogical design, online learning, and self-directed learning, had positive and significant correlation.
4. Was there a relationship between instructors' perceptions of using ATutor including the usefulness, ease of use, interaction and communication, and using ATutor?	• The results showed that all four instructors' perception variables (constants) including, usefulness, ease of use, interaction and communication, and using ATutor, had positive and significant correlation.

Table 37 (Continued)

Research Questions and Major Findings

Research Question	Major Finding
5. What were the perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU?	• The results show that the most important rank of ATutor features of students was Content Navigation (54.8%) and instructors' rank was Annoucement (37.5%). Students' most liked about ATutor was Navigation (42.9%). While, instructors' most like about ATutor was Interaction (40.0%).
	• The results showed that the least important rank of ATutor features of students was Polls (31.3%) and instructors' rank were Site-map, Polls, Group, Blogs, and Related Topics (20.0%). Students' least liked about ATutor was Polls (30.0%). While, instructors' least like about ATutor wasTime consuming; Production (40.0%).
6. What features would users like to see added or removed from ATutor as an open source software product?	• Students indicated that there was no feature should be added to ATutor because ATutor features were adequate (33.3%). Whereas, 33.3%, of students reported that ATutor should add multimedia content features. While, the results from focus group interview showed that students indicated that videos or movies uploading, discussion board, help or ATutor manual, video conference, and links should be added to ATutor.
	• Instructors indicated that there were some features that should be added to ATutor including, Online (10.0%), Conferencing (10.0%), Case study(10.0%), Picture Upload Download Tools (10.0%). Whereas, 10.0% of instructors indicated that there was no feature should be add to ATutor because ATutor features were adequate. While, the results from focus group interview showed that instructors indicated that they would like to see video conference features added to ATutor.
	• Students indicated that there was no features that should be removed to ATutor (35.3%) and 23.5% of students reported that polls should removed from ATutor. While, the results from focus group interviews showed that reading list and frequently asked questions (FAQ) should be removed from ATutor.

Table 37 (Continued)

Research Questions and Major Findings

Research Question	Major Finding
	• Instructors indicated that there was no feature that should be removed from ATutor (30.0%) and 10.0% of instructors indicated that Blogs should be removed from ATutor. While, the results from focus group interview showed that instructors indicated that there was no feature that should be removed from ATutor. • Students indicated that they prefer to learn from multimedia, audio, and printed material.
7. Did ATutor support or detract from self-directed learning?	• The ability to set an appropriate pace for learning and ability to get assistance from various resources made ATutor support Self-directed learning. • Course schedule and technological problem made ATutor detract from Self-directed learning
8. What were students and instructors' suggestions for improving ATutor at TDU?	• Students suggested that university should deliver all online courses by using ATutor, provide orientation workshop, improve system operation and course design, motivate student to use ATutor, ,and increase the number of ATutor courses. • Instructors indicated that university should provide all graduate courses online. Instructors also mentioned that besides using ATutor as Learning Course Management System (LCMS) to deliver those online courses, the university should also use other appropriate LCMS such as Designing4Learning +Portfolio (D4LP). In addition, instructor suggested that university should make ATutor available at anytime improve system operation, improve course management system, and evaluate ATutor courses.

Conclusions and Discussions

To conclude and discuss the findings of the study, eight research questions that

guided this study are discussed below:

Research Question #1

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What demographic variables were associated with students' and instructors' perceptions of using ATutor?

Learners characteristics, including gender, comfort of using computer, comfort of using ATutor, time spent online each week, and frequency of access to ATutor each week, had positive significant correlation to students' perception of using ATutor. Age, home internet access, place to access course website, home internet connection, and work internet connection had negative significant correlation to students' perception of using ATutor (see Table 38).

1. In this study, we would say that females tend to have more positive perception of using ATutor in term of usefulness and interaction and communication than males. However, the relationship between gender and students' perception of using ATutor was weak. The relationship between comfort with using the computer, ATutor, and students' perception of using ATutor was moderate. The findings agree with Suanpang and Petocz (2006), who reported students' characteristics such as being female, educational background had a positive effect on their learning.

The relationship between comfort using a computer, ATutor and students' perception of using ATutor was moderate. The findings agree with Thurmond, Wambach, Connors, & Frey (2002), who reported that students' perceived computer skills, previous online learning experience positively impacted student satisfaction.

The relationship between time spent online each week, frequency of accessing ATutor each week and students' perception of using ATutor was weak. The findings agree with Moore and Kearsley (2004) and Oleks (2004), who reported that the variables

that determined the satisfaction of distance education courses were amount and type of online interaction.

2. In this study, we would say that younger students tended to have higher perception of using ATutor in term of usefulness, e-learning andragogical design, and self-directed learning than older students and the relationship between age and students' perception of using ATutor was moderate. The findings agree with Suanpang and Petocz (2006), students' characteristics such as being younger had positive effect on their learning.

The relationship between home internet accesses, place to access course website, home internet connection, work internet connection and students' perception of using ATutor was weak.

Table 38

Correlation with Students' Perceptions of Using ATutor

Independent variables (Constants)	Dependent Variables	Correlation	Interpret Relationship
1. Gender (Female)	Usefulness, Interaction and communication	Positive	Weak
2. Comfortable of using computer	Usefulness, Ease of use, E-learning andragogical design, Online learning, Self-Directed Learning	Positive	Moderate
	Interaction and communication,	Positive	Weak
3. Comfortable of using ATutor	Usefulness, Ease of use, Interaction and communication, E-learning andragogical design, Online learning, Self-Directed Learning	Positive	Moderate

Table 38 (Continued)

Correlation with Students' Perceptions of Using ATutor

Independent variables (Constants)	Dependent Variables	Correlation	Interpret Relationship
4. Time spent online each week	Usefulness, Ease of use, Interaction and communication, E-learning andragogical design, Online learning, Self-Directed Learning	Positive	Weak
5. Access to ATutor in each week	Usefulness, Ease of use, Interaction and communication, E-learning andragogical design, Online learning, Self-Directed Learning	Positive	Weak
6. Age	Usefulness, E-learning andragogical design, Self-Directed Learning	Negative	Moderate
	Ease of use, Interaction and communication, Online learning	Negative	Weak
7. Home internet access	Usefulness	Negative	Weak
8. Place to access course website	Usefulness, Ease of use, Interaction and communication, E-learning andragogical design, Online learning	Negative	Weak
9. Home internet connection	E-learning andragogical design, Online learning,	Negative	Weak
10. Work internet connection	Ease of use, Self-Directed Learning	Negative	Weak

Instructor characteristics, such as e-mail student each week, chat participated each

week, forum participated in each week, group forum participated each week, ATutor

satisfaction, online teaching experience, role as instructor in teaching via ATutor, support

from TDU, and ATutor workshop attended had significant correlation (see Table 39).

3. In this study, we would say that instructors who have more satisfaction with

ATutor tended to have higher perception of using ATutor than instructors who have less

satisfaction with ATutor and the relationship between ATutor satisfaction and perception

of using ATutor was strong.

The relationship between e-mails sent to students each week and instructors'

perception of interaction and communication was moderate. The relationship between

chats participated each week, forums participated each week and instructors' perception

of usefulness was moderate. The relationship between group forums participated each

week and instructors' perception of usefulness was strong. The findings agree with

Moore and Kearsley (2004), who noted that "the most important role of the instructor in

online class is to ensure a high degree of interactivity and participation" (p. 78).

Additionally, Su et al. (2005) noted that instructors think that interaction is crucial to

online learning and teaching.

4. The relationship between instructors' online teaching experience, role,

supported, and workshop attended and perception of using ATutor was strong. The

significant negative correlation between these variable was unexpected. The more

involve in ATutor, the less liked ATutor. This may explain that instructors who did more

involve in ATutor had less satisfaction with ATutor. It can be assumed that they had

negative experience when developing and teaching via ATutor.

In this study, we would say that instructors who have more online teaching

experience, role as instructor, support from university, and ATutor workshop attended

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tend to have lower perception of using ATutor than instructors who have less online

teaching experience, role as instructor, supported from TDU, and ATutor workshop

attended. The findings disagree with Howell et al.' (2003), who noted that preparing

instructors to teach online is considered one of the most important issues in educational

system today.

Table 39

Correlation with Instructors' Perceptions of Using ATutor

Independent variables (Constants)	Dependent Variables	Correlation	Interpret Relationship
1. E-mail student in each week	Interaction and communication	Positive	Moderate
2. Chat participated in each week	Usefulness	Positive	Moderate
3. Forum participated in each week	Usefulness	Positive	Moderate
4. Group Forum participated in each week	Usefulness	Positive	Strong
	Ease of use	Positive	Moderate
5. ATutor satisfaction	Usefulness, Ease of use, Interaction and communication	Positive	Strong
	Using ATutor	Positive	Moderate
6. Online teaching experience	Usefulness, Using ATutor	Negative	Strong
7. Role as instructor in teaching via ATutor	Using ATutor	Negative	Strong

Table 39 (Continued)

Correlation with Instructors' Perceptions of Using ATutor

Independent variables (Constants)	Dependent Variables	Correlation	Interpret Relationship
8. Support from TDU	Usefulness, Ease of use, Interaction and communication, Using ATutor	Negative	Strong
9. ATutor workshop attended	Usefulness, Using ATutor	Negative	Strong

Research Question #2

What are students' and instructors' perceptions of using ATutor as a LCMS? What do users perceive in terms of: usefulness, ease of use, interaction and communication, e-learning andragogical design, perception of online learning, self-directed learning, and teaching for TDU by using ATutor.

Based on the ten point Likert scale method used in the survey questionnaire, ten is highest score and means the respondents strongly agree with the statement of the survey items, and one is the lowest score and means they strongly disagree. The overall mean score of students' perception of ATutor ranged from 6.84 to 7.49 out of 10 and standard deviations ranged from 1.47 to 1.90. There were usefulness ($M = 6.84$, $SD = 1.90$), ease of use ($M = 7.37$, $SD = 1.71$), interaction and communication ($M = 7.33$, $SD = 1.78$), e-learning andragogical design ($M = 7.39$, $SD = 1.77$), students' perception of online learning ($M = 7.49$, $SD = 1.59$), and students' perception of self-directed learning ($M = 7.33$, $SD = 1.47$). These results indicated that students were highly satisfied with ATutor.

The overall mean score of instructors' perception of ATutor ranged from 5.70 to 7.40 out of 10 and standard deviations ranged from 1.35 to 2.00. There were usefulness

($M = 7.40$, $SD = 1.35$), ease of use of ATutor features ($M = 7.10$, $SD = 1.37$), interaction

and communication ($M = 7.30$, $SD = 1.89$), instructors' perception of using ATutor ($M =$

5.70, $SD = 2.00$). These results indicated that instructors were highly satisfied with

ATutor except the perception of teaching for TUD with using ATutor that instructor was

neutral satisfied with ATutor.

Research Question #3

Is there a relationship between students' perceptions of using ATutor including the

usefulness, ease of use, interaction and communication, e-learning andragogical

design, perception of online learning, and self-directed learning?

All six students' perception variables (constants) had a positive and significant

correlation. These results mean that the more students perceive usefulness, ease of use,

helpful of interaction and communication via ATutor, well designed of ATutor, and

helpful of online learning, the more liked ATutor they perceived. This was not

unexpected. It can be assumed that the students who perceived ATutor was useful and

helpful for their learning would have high satisfaction with ATutor.

Research Question #4

Is there a relationship between instructors' perceptions of using ATutor including the

usefulness, ease of use, interaction and communication, and using ATutor?

All four instructors' perception variables (constants) had a positive and significant

correlation. These results mean that the more instructors perceive usefulness, ease of use,

helpful of interaction and communication via ATutor, and helpful of ATutor, the more

likely ATutor they perceived. This was not unexpected. It can be assumed that the instructors who perceived ATutor was useful and helpful for their teaching would have high satisfaction with ATutor.

The findings from research question #2 to research question #4 agree with the several researches as follows. For usefulness and ease of use, the finding agree with Lee (2001), who reported that learners' beliefs of usefulness and ease of use have direct impact on intention to use web-based learning technology. For interaction and communication, the findings agree with Wang (2009), who reported that ease of access was critical for online learning environment and those who have easier access trend to participate more in online learning. In addition, the finding also agree with Picciano' s study (2002) indicated that there were strong relationship between students perception of interaction and perceived learning. This finding is also support Oleaks' study (2004) that conformed the need for student/faculty interaction in the online environment. For e-learning andragogical design, the finding agree with Filimban' s study (2008) indicated that effective teachers in online courses should contribute expert course design and delivery, perform appropriate assessments, and encourage collaboration.   Lastly, for self-directed learning, this study agrees with Brookfield (2009), who reported that online education may create new possibilities for self-directed learning.

Research Question #5

What are the perceived benefits and barriers to effectively disseminating ATutor in distance education at TDU?

In this study, we would say that features of ATutor that students like were content navigation, test & survey, and export content respectively. While features of ATutor that instructor like were announcements, and ACollab. It can be assumed that students perceived the benefit of ATutor was the content provided. While instructors perceived the benefit of ATutor was interaction and communication function.

Students perceived poll, related topics, frequently asked questions (FAQ) were less important. While, instructors perceived poll, site-map, blogs and related topics were less important. It can be assumed that polls was less important features. The important issues that instructor found were system operations, lack of technological skills, few students accessing ATutor, and time intensive

The findings agree with Song, Singleton, Hill, and Koh (2004), who summarized studies on students' perceived strengths and weaknesses of online learning. They reported that the primary forms of communication are chat, e-mail, and bulletin boards and instructor should drive this tool in order to facilitate communication. In addition, they reported that lack of community, difficulty understanding instructional goal, and technical problems were challenges in online learning experiences.

Research Question #6

What features would users like to see added to or removed from ATutor as an open source software product?

In this study, we would say that features that students would like to see added to ATutor were multimedia content, videos or movies uploading, help feature or ATutor manual and links, and video conference. While, features that instructors would like to

see added to ATutor were online conferencing/video conference, case study, pictures, upload and download tools. It was interesting to note that both students and instructor also mentioned that there was no feature should be added to ATutor because ATutor features were adequate.

Features that students would like to see removed from ATutor were polls, reading list, and frequently asked questions (FAQ). While, feature that instructors would like to see removed from ATutor was blogs. It was interesting to note that both students and instructor also mentioned that there was no feature should be removed to ATutor because ATutor features were adequate.

It can be assumed that students and instructors like the features of ATutor that provided on the course website now. There were some features that they would like to see added to ATutor such as online conference and multimedia. This may explain that both student and instructors need synchronous communication. There were some features that they would like to see removed from ATutor such as polls and blogs. This may explain that both student and instructors may be less used polls and blogs.

Research Question #7

Does ATutor support or detract from self-directed learning?

In this study, we would say that ATutor support self-directed learning were ability to set an appropriate pace for learning and ability to get assistance from various resources. The findings agree with Knowles (1990), who indicated the skills of self-directed leaning as the ability to design a plan of strategies for making appropriate use of learning resources effectively. In addition, Brookfield (2009) summarized that one of the

features of online learning is an increasing degree of control by learners over the pace of learning and online education may create new possibilities for self-directed learning.

However, ATutor detract from Self-directed learning was course schedule and technological problem.

Research Question #8

What are students and instructors' suggestions in order to improve using ATutor in distance education?

In this study, we would say that students would like to see the university provide all online courses by using ATutor, organize orientation/workshop of using ATutor, improve system operation and course design, and motivate student to use ATutor. While instructors would like to see university provide all graduate courses via online, make ATutor available at anytime, improve course management system, evaluate ATutor courses, and arrange time to interact with students. The findings agree with Thompson and Irele (2007), who summarized research on evaluation and quality from several researches that the quality indicators in distance education including: institutional support, course development, teaching/learning process, course structure, student support, faculty support, and evaluation and assessment.

Recommendations and Implications for Best Practice in Open and Distance

Education

Based on the findings of this study, university administrators, instructors,

instructional designers or technical support staffs should be considering the following

recommendations when developing online learning courses.

Table 40

Recommendations and Implications for Best Practice in Open and Distance Education

Directive	Implementation for Best Practice in Open and Distance Education
1. University Administrators *a) Operation systems/infrastructures* 1) Provide a stable ATutor system.	• The university should test the function of the system frequently.
2) Provide proper hardware, software, and Internet infrastructure.	• Provide adequate computer set and resources to staffs who work on develop ATutor courses.

3) Provide effective course administration system for ATutor.	• Provide effective course administration system including:
	    1) Course management system such as login/accessing system, tracking/report, student profile, and data base.
	    2) Content management system such as file manager, content editor, ATutor features, learning record.
	    3) Communication system including asynchronous communication such as discussion board, forums, e-mail and synchronous communication such as chat room.
	    4) Testing system that enhances self-directed learning such as means enhance students' ability to set appropriate criteria to assess their learning.

Table 40 (Continued)

Recommendations and Implications for Best Practice in Open and Distance Education

Directive	Implementation for Best Practice in Open and Distance Education
b) *Instructor supports*	
1) Ensure that instructor is well prepared to teach online.	• Arrange ATutor and instructional design workshop for new instructors who plan to teach online.
2) Provide instructors adequate support and incentives to teach online courses	• Continue providing the training and workshop on using ATutor, instructional design, and related topics to instructor who teach online. • Count teaching online on instructors' work load when give them a promotion.
3) Develop clear policies about instructors' workload, compensation, and intellectual property rights.	• Conduct public hearing with instructor about instructors' workload, compensation, and intellectual property rights and set standard for teaching online.
c) *Instructional designer supports*	
1) Provide instructional designers adequate support and incentives to develop online courses.	• Continue providing the training and workshop on develop ATutor course, instructional design, and related topics to instructor who develop online courses.
2) Develop clear policies about instructional designers' workload, compensation, and intellectual property rights.	• Conduct public hearing with instructional designers about their workload, compensation, and intellectual property rights and set standard for developing online courses.
3) Provide adequate resources such as hardware, software, and Internet infrastructure.	• Provide adequate computer set and resources to staffs who work on develop ATutor courses.
d) *Student supports*	
1) Provides ATutor orientation course both face-to-face and online in order to enhance student abilities of using ATutor.	• Arrange face-to-face ATutor orientation course in the beginning week of each semester.

Table 40 (Continued)

Recommendations and Implications for Best Practice in Open and Distance Education

Directive	Implementation for Best Practice in Open and Distance Education
	• Arrange online ATutor orientation course that students can access as they need.
2) Provide help desk or help center both face-to-face and online in order to help students about using ATutor.	• Set up help desk or help center for walk in students. • Set up online help center.
2. Instructors 1) Develop technical skills to enable them to use educational technology effectively such as skills of using computer, Internet, educational software.	• Develop instructor's plan for improvement. • Attend the training/workshop courses.
2) Fully utilize ATutor features in the e-learning course to elevate students' intention to use ATutor.	• Use all ATutor features and motivate students to use all ATutor features. • Develop course contents and learning material that properly organized and can accesses at all times.
3) Motivate students to access ATutor	• Plan activities that require student to access ATutor. • Provide prompt feedback. • Allow students to communicate with others and participate using the communication tools that provide via ATutor such as chats, forums, discussions, and announcements. • Provide activities and assessment that require students to construct meaning from the information presented and engage in authentic problem-solving activities or case study • Arrange time to interact with students synchronously such as chat, video conference or real time online. • Give student extra points/credits to participated in ATutor and announce this procedure to all students who enroll in the course.

Table 40 (Continued)

Recommendations and Implications for Best Practice in Open and Distance Education

Directive	Implementation for Best Practice in Open and Distance Education
3. Instructional designers 1) Enhance their ability to use new educational technology such as computer, Internet, software.	• Develop plan for improvement. • Attend the training/workshop courses.
2) Well designed e-learning courses.	• Design e-learning courses that ease of use and usefulness. • Design and develop properly templates and features for adult learners such as fonts, colors, and graphics.
3) Provide students support when they have technological issues.	• Provide help function on ATutor web page • Provide pop up description on each feature menu • Provide student information about help desk or help hotline that student can communicate when they need.
4. Designing e-learning courses using open source software; ATutor Best practice guidelines for design online courses using open source software; ATutor	• Fully utilize ATutor features in the e-learning courses. • Design e-learning courses that ease of use and usefulness. Well organized course template and consistency used in every courses. • Provide orientation/training of using ATutor. • Provide multimedia information that proper to adult learners. • Provide communication tools both asynchronous and synchronous communication and motivate student to use these tools. • Provide learners opportunities to collaboration with others. • Provide activities and assessment that require students construct meaning from learning activities.

Table 40 (Continued)

Recommendations and Implications for Best Practice in Open and Distance Education

Directive	Implementation for Best Practice in Open and Distance Education
	• Provide pop up description on each features or menu. • Provide student support related to their needs.

Recommendations for Future Research

The following recommendations are made for further study:

1. The main focus of this study was students' and instructors' perception of using ATutor. Since instructional designers or technical support staffs are the other user group of ATutor, instructional designers' or technical support staffs' perception needs to be investigated.

2. Future research in how using open source software as an learning content management system to enhances students' self-directed learning would be helpful in providing information to university administrators, instructors, and instructional designers relating to the development of e-learning courses.

3. Future research in teaching and learning effectiveness of using ATutor needs to be conducted.

4. Since there are not many studies that focus on students' and instructors' perception of using open source software as learning content management system in distance education. This study should be replicated with other groups.

Limitations of the Study

The limitations of the study are as follows:

1. The study is limited to the perceptions of users of the ATutor as a Learning

    Content Management System for e-learning courses, namely students and

    instructors.

2. The study examines students' perceptions of how the interface and content of

    ATutor may impact on their learning.

3. The findings of this study will be limited to the use of ATutor in distance

    education at Thailand Distance University.

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APPPENDICES

APPENDIX A

INSTITUTIONAL BOARD APPROVAL FORM

Oklahoma State University Institutional Review Board

Date: Friday, December 04, 2009

IRB Application No   AG0942

Proposal Title: Student and Instructor Perceptions of Using A-Tutor as the Learning
                          Content Management System for Learning at a Distance in Thailand

Reviewed and   Exempt
Processed as:

Status Recommended by Reviewer(s): Approved   Protocol Expires: 12/3/2010

Principal
Investigator(s):

Sineenuch Sanserm   Kathleen Kelsey
464 Ag Hall   466 Ag Hall
Stillwater, OK 74078   Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the
rights and welfare of individuals who may be asked to participate in this study will be respected, and that
the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45
CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval
stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol
   must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar
   year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are
   unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the
authority to inspect research records associated with this protocol at any time. If you have questions
about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219
Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

APPENDIX B

INFORMED CONSENT

CONSENT TO PARTICIPATE IN A RESEARCH STUDY
OKLAHOMA STATE UNIVERSITY

PROJECT TITLE: Student and Instructor Perceptions of Using A-Tutor® as the Learning Content Management System for Learning at a Distance in Thailand

INVESTIGATORS: Sineenuch K. Sanserm, Ph.D. student in the Department of Agricultural Education, Communication and Leadership,(405) 714-3155
Dr. Kathleen Kelsey, Professor, Department of Agricultural Education, Communications and Leadership, (405) 744-8137

PURPOSE:
The purpose of this study is to describe students' and instructors' perceptions of A-Tutor® as LCMS when delivering e-learning.

PROCEDURES:
You will be asked to participate in the focus group interview. You will be asked questions about your opinion on using A-Tutor® as the supplemental web-based instruction. Participation in the focus group interview should not exceed thirty minutes.

RISKS OF PARTICIPATION:
There are no anticipated risks associated with participating. Furthermore, there are no known risks associated with this project which are greater than those ordinarily encountered in daily life.

BENEFITS OF PARTICIPATION:
There are no benefits or compensation associated with participating in this brief research project. However, if you would like a copy of the final product where your answers will be used, you may contact the researcher (via email: Sineenuch.k.sanserm@okstate.edu) after May 2010 (the anticipated completion date of the study).

CONFIDENTIALITY:
All answers to the focus group interviews are anonymous and will not be associated with you personally at anytime during, after your participation. During the research, your answers are private and confidential, and will only accessible to the researcher, and will be coded numerically. After the research is complete, the researcher's advisors may have access to the data. After completion of the study, any and all persons will have access to the research results via the dissertation.

The research data including recordings and other data gathered from the focus groups will be kept by the investigator in a locked cabinet at the advisor's office at room 466 Ag. Hall for one year. Only the researchers will be able to access the data. The data will be reported in aggregated format. Quotes with pseudonym from the focus group interviews may be used by the researcher. The data will not be stored on a networked computer. The data will be reported

and incorporated into the dissertation and subsequent journal publications. The anonymous information that you will be providing will be kept by the researcher until the final project is complete.

COMPENSATION:
No compensation will be offered for participation on the research study. Participation is purely voluntary.

CONTACTS:
If you have any questions, please feel free to contact the researcher (Sineenuch K. Sanserm) by email at Sineenuch.k.sanserm@osktate.edu
If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

PARTICIPANT RIGHTS:
Your participation in this research project is voluntary, There is no penalty for refusal to participate, and that you are free to withdraw your consent and participation in this project at any time, without penalty.

CONSENT DOCUMENTATION:
I have been fully informed about the procedures listed here. I am aware of what I will be asked to do and the benefits of my participation. I also understand the following statements:

I affirm that I am 18 years of age or older.

I have read and fully understand this consent form. I sign it freely and voluntarily. A copy of this form will be given to me. I hereby give permission for my participation in the study.

_____   _____
Signature of Participant   Date

I certify that I have personally explained this document before requesting that the participant sign it.

_____   _____
Signature of Researcher   Date

Okla. State Univ.
IRB
Approved 12/4/09
Expires 12/3/10
IRB# 480942

APPENDIX C

COVER LETTER; SURVEY AND FOCUS GROUP

Dear Participant,

I am Sineenuch K. Sanserm, a Ph.D. student under the direction of Professor Dr. Kathleen Kelsey in the Agricultural Education, Communication and Leadership Department at Oklahoma State University, Oklahoma, USA. I would like to take this opportunity to invite you to participate in a survey entitled *"Student and Instructor Perceptions of Using A-Tutor® as the Learning Content Management System for Learning at a Distance in Thailand"*. It will only take **about 10-15 minutes** of your valuable time to complete this survey.

There are no known risks associated with this project that are greater than those ordinarily encountered in daily life. Your response to this survey is voluntary and your answers will be kept **anonymous and confidential**. Your answers will be kept separately and will not be associated with the responses. The results will be presented in an aggregated format, and no specific respondent's identity will be released or identified on the report. While I would like you to answer the survey completely, you have the right to not respond to any of the questions, for whatever personal reasons you may have.

If you have any questions regarding the questionnaire, you may contact me directly at sineenuch.k.sanserm@okstate.edu or by phone at 01-8145020. This survey has been approved by the *Institutional Review Board* at Oklahoma State University. If you have any questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

I would like to thank you in advance for your participation and for volunteering your valuable time.

Sincerely,

Sineenuch K. Sanserm
Ph.D. Student
Department of Agricultural Education, Communication and Leadership
College of Agricultural Sciences and Natural Resources
Oklahoma State University
448 Agricultural Hall
Stillwater, Ok 74078

Dear Participant,

I am Sineenuch K. Sanserm, a Ph.D. student under the direction of Professor Dr. Kathleen Kelsey in the Agricultural Education, Communication and Leadership Department at Oklahoma State University, Oklahoma, USA. I would like to take this opportunity to invite you to participate in the focus group interview of the research entitled *"Student and Instructor Perceptions of Using A-Tutor® as the Learning Content Management System for Learning at a Distance in Thailand"*. It will only take **about 30 minutes** of your valuable time to participate in the focus group interview.

There are no known risks associated with this project that are greater than those ordinarily encountered in daily life. Your response to this focus group interview is voluntary and your answers will be kept **anonymous and confidential**. Your answers will be kept separately and will not be associated with the responses. The results will be presented in an aggregated format, quotes with pseudonym from the focus group interviews may be used by the researcher, and no specific respondent's identity will be released or identified on the report. While I would like you to answer the focus group questions, you have the right to not respond to any of the questions, for whatever personal reasons you may have.

If you have any questions regarding the questionnaire, you may contact me directly at sineenuch.k.sanserm@okstate.edu or by phone at 01-8145020. This focus group interview questionnaires outline has been approved by the *Institutional Review Board* at Oklahoma State University. If you have any questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-3377 or irb@okstate.edu.

I would like to thank you in advance for your participation and for volunteering your valuable time.

Sincerely,

Sineenuch K. Sanserm
Ph.D. Student
Department of Agricultural Education, Communication and Leadership
College of Agricultural Sciences and Natural Resources
Oklahoma State University
448 Agricultural Hall
Stillwater, Ok 74078

APPENDIX D

STUDENT SURVEY QUESTIONNAIRE

Student Survey Questionnaires

<u>Research Title:</u> *Student and Instructor Perceptions of Using A-Tutor® as the Learning Content Management System for Learning at a Distance in Thailand*

<u>Direction:</u>   1. Please check the appropriate box or complete the answer. There is no right or wrong answer. Please choose the answer which represents **your opinion**.
    2. The questions ask about you perceptions of using A-Tutor®. Use the scale below to answer the questions. If you strongly agree with the statement, circle the number 10; if you strongly disagree with the statement; circle the number 1. It you feel more or less agree with the statement, find the number between 1 and 10 that best describes you and circle that number
For example- Circle

| **10** | **9** | **8** | ⑦ | **6** | **5** | **4** | **3** | **2** | **1** |

Strongly Agree   Strongly Disagree
or Very comfortable   Very uncomfortable
or Very useful   not at all useful

Part 1: Learner Characteristics

1. How comfortable are you using computer technology? Circle the number that best represents your perception.

| **10** | **9** | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |

Very comfortable   *Very comfortable*

2. How comfortable are you using A-Tutor®? Circle the number that best represents your perception.

| **10** | **9** | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |

Very comfortable   *Very comfortable*

3. Do you have Internet access at home?   ❑ Yes   ❑ No

4. Where did you usually access the course website?
    ❑ Home ❑ Work ❑ Other _____

5. What is your home internet connection?
    ❑ Low-speed (Dial-up)   ❑ Hi-speed (ADSL, Cable)   ❑ LAN ❑ Other_____

6. What is your work internet connection?
    ❑ Low-speed (Dial-up)   ❑ Hi-speed (ADSL, Cable)   ❑ LAN ❑ Other_____

7. How many courses have you taken that used A-Tutor ®?
    ❑ 1 course ❑ 2 courses ❑ 3 courses ❑ 4 courses ❑ More than 4 courses

Direction: If you have taken more than 1 course using A-Tutor®, please answer the following questions in regard to your most recently course:

8. In a typical week, I spent_____hours online for my course

❑ 2 hours or less ❑ 3-4 hours ❑ 5-6 hours ❑ 7-8 hours ❑ more than 9 hours

9. In a typical week, I e-mailed my instructor

❑ 0 time ❑ 1 time ❑ 2 times ❑ 3 times ❑ 4 or more times

10. In a typical week, I accessed to A-Tutor®

❑ 0 time ❑ 1 time ❑ 2 times ❑ 3 times ❑ 4 or more times

11. In a typical week, I participated in a "Chat" for my course

❑ 0 time ❑ 1 time ❑ 2 times ❑ 3 times ❑ 4 or more times

12. In a typical week, I participated in a "Forums" for my course

❑ 0 time ❑ 1 time ❑ 2 times ❑ 3 times ❑ 4 or more times

13. In a typical week, I participated in a "Group Forums" for my course

❑ 0 time ❑ 1 time ❑ 2 times ❑ 3 times ❑ 4 or more times

Part 2: Technology Characteristics

For the picture of the A-Tutor® features, please see the picture in the last page of questionnaire.

1. Usefulness of A-Tutor® features.

In this study, usefulness refers to individuals' perceptions that the technology or computer application will help them perform their jobs better (Davis, 1989).

A-Tutor® has 21 features. Please indicate to what extend you agree or disagree with the usefulness of A-Tutor® features each listed below.

Circle the number that best represents your perception.

Usefulness of A-Tutor® features	Your perceptions										Never Use this features
	Very useful								Not at all useful		
1. Content Navigation included course content	10	9	8	7	6	5	4	3	2	1	0
2. Related Topics	10	9	8	7	6	5	4	3	2	1	0
3. Users Online	10	9	8	7	6	5	4	3	2	1	0
4. Forums	10	9	8	7	6	5	4	3	2	1	0
5. Glossary	10	9	8	7	6	5	4	3	2	1	0

6. Chat	10	9	8	7	6	5	4	3	2	1	0
7. TILE Repository Search	10	9	8	7	6	5	4	3	2	1	0
8. Links	10	9	8	7	6	5	4	3	2	1	0
9. Tests & Surveys	10	9	8	7	6	5	4	3	2	1	0
10. Site-map	10	9	8	7	6	5	4	3	2	1	0
11. Export Content	10	9	8	7	6	5	4	3	2	1	0
12. My Tracker	10	9	8	7	6	5	4	3	2	1	0
13. Polls	10	9	8	7	6	5	4	3	2	1	0
14. Directory	10	9	8	7	6	5	4	3	2	1	0
15. Frequently Asked Question (FAQ)	10	9	8	7	6	5	4	3	2	1	0
16. Group	10	9	8	7	6	5	4	3	2	1	0
17. Reading List	10	9	8	7	6	5	4	3	2	1	0
18. File Storage	10	9	8	7	6	5	4	3	2	1	0
19. Blogs	10	9	8	7	6	5	4	3	2	1	0
20. ACollab	10	9	8	7	6	5	4	3	2	1	0
21. Announcements	10	9	8	7	6	5	4	3	2	1	0
Overall, I was satisfied with the usefulness of A-Tutor® features.	10	9	8	7	6	5	4	3	2	1	0

2. Ease of use and system operation characteristics

In this study, ease of use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989 p. 320).

Circle the number that best represents your perception.

Please indicate to what extent you agree or disagree with each of the following statements:	Your perceptions									
	Strongly Agree									Strongly Disagree
1. A-Tutor® system is easy to use.	10	9	8	7	6	5	4	3	2	1
2. A-Tutor® system makes it easy for me to find the content I need.	10	9	8	7	6	5	4	3	2	1
3. A-Tutor® system is user-friendly.	10	9	8	7	6	5	4	3	2	1
4. The operation of A-Tutor® system is stable.	10	9	8	7	6	5	4	3	2	1

5. A-Tutor® system enables me to control my learning progress.	10	9	8	7	6	5	4	3	2	1
6. A-Tutor® system enables me to learn the content as needed.	10	9	8	7	6	5	4	3	2	1
7. A-Tutor® system records my learning progress and performance.	10	9	8	7	6	5	4	3	2	1
Overall, I am satisfied with the ease of use and system operation of A-Tutor®	10	9	8	7	6	5	4	3	2	1

3. Form the above features; please rank three important and less important features of A-Tutor®

(Rank 1 = the most important or the most less important)

Important features of A-Tutor®   Less important features of A-Tutor®

1._____   1. _____

2._____   2. _____

3._____   3. _____

4. Which features that you want to removed from A-Tutor® and why?

    1. _____ Why? _____

    2. _____ Why? _____

    3. _____ Why? _____

5. Which features that you want to added to A-Tutor® and why?

    1. _____ Why? _____

    2. _____ Why? _____

    3. _____ Why? _____

6. What I most like about A-Tutor®?

    1. _____

    2. _____

    3. _____

7. What I least like about A-Tutor®?

    1. _____

    2. _____

    3. _____

Part 3: Interaction Characteristic

Please indicate to what extent you agree or disagree with each of the following statements:	Your perceptions									
	Strongly Agree									Strongly Disagree
1. A-Tutor® system makes it easy for me to discuss questions with my teachers.	10	9	8	7	6	5	4	3	2	1
2. I felt A-Tutor® enhanced communication with teacher.	10	9	8	7	6	5	4	3	2	1
3. A-Tutor® system makes it easy for me to discuss questions with other students.	10	9	8	7	6	5	4	3	2	1
4. I felt A-Tutor® enhanced communication with other students.	10	9	8	7	6	5	4	3	2	1
5. A-Tutor® system makes it easy for me to share what I learn with the learning community.	10	9	8	7	6	5	4	3	2	1
6. A-Tutor® system makes it easy for me to access the content.	10	9	8	7	6	5	4	3	2	1
7. A-Tutor® system makes it easy for me to access the course activities.	10	9	8	7	6	5	4	3	2	1
8. A-Tutor® system makes it easy for me to access the shared content from the learning community.	10	9	8	7	6	5	4	3	2	1
Overall, I was satisfied with the level of interactivity in the course.	10	9	8	7	6	5	4	3	2	1

Part 4: E-Learning Andragogical Design

Please indicate to what extent you agree or disagree with each of the following statements:	Your perceptions									
	Strongly Agree									Strongly Disagree
A. Connectivity: 1. Access to A-Tutor® was available when needed.	10	9	8	7	6	5	4	3	2	1
B. Flexibility: 2. I find E-learning to be valuable because it can be flexible to allow me to use it when I want to.	10	9	8	7	6	5	4	3	2	1
3. A-Tutor® offers flexibility in learning as to time and place.	10	9	8	7	6	5	4	3	2	1
C. Designed of e-learning: 4. A-Tutor® site was clearly organized.	10	9	8	7	6	5	4	3	2	1

5. The course is designed with various visual and auditory contents that improve my learning.	10	9	8	7	6	5	4	3	2	1
6. The course is designed with textual contents that improve my learning.	10	9	8	7	6	5	4	3	2	1
7. It was easy to navigate within A-Tutor®	10	9	8	7	6	5	4	3	2	1
8. Directions/support services are needed to use A-Tutor®	10	9	8	7	6	5	4	3	2	1
D. Interactivity: 9. Using A-Tutor® allows me to accomplish learning tasks quickly.	10	9	8	7	6	5	4	3	2	1
10. Using A-Tutor® enhanced autonomous Pre-test/ Post-test.	10	9	8	7	6	5	4	3	2	1
11. Course assessments are in agreement with the course contents and learning objectives.	10	9	8	7	6	5	4	3	2	1
E. Collaboration: 12. I felt A-Tutor® enhanced collaboration with other students.	10	9	8	7	6	5	4	3	2	1
13. A-Tutor® communication tools I used (Chat, Forum) were worthwhile	10	9	8	7	6	5	4	3	2	1
14. I felt part of a learning community of using A-Tutor®	10	9	8	7	6	5	4	3	2	1
F. Extended opportunities: 15. Using A-Tutor® learning increases my learning productivity compare to correspondence.	10	9	8	7	6	5	4	3	2	1
16. Using A-Tutor® learning increases my effectiveness in learning compare to correspondence.	10	9	8	7	6	5	4	3	2	1
G. Motivation: 17. I enjoyed using A-Tutor® as a supplement to my course.	10	9	8	7	6	5	4	3	2	1
18. I feel confident using A-Tutor®.	10	9	8	7	6	5	4	3	2	1
19. I always felt challenged and motivated to learn via A-Tutor®.	10	9	8	7	6	5	4	3	2	1
Overall, I was satisfied with A-Tutor® interface	10	9	8	7	6	5	4	3	2	1

Part 5: Student perception of online learning

Please indicate to what extent you agree or disagree with each of the following statements:	Your perceptions									
	Strongly Agree									Strongly Disagree
1. A-Tutor® courses contribute significantly to my professional growth.	10	9	8	7	6	5	4	3	2	1
2. I find A-Tutor® courses useful for my learning.	10	9	8	7	6	5	4	3	2	1
3. I find using A-Tutor® courses make it easier to learn course contents.	10	9	8	7	6	5	4	3	2	1
4. I find using A-Tutor® courses enhance my effectiveness in learning.	10	9	8	7	6	5	4	3	2	1
5. I believe A-Tutor® has potential as a learning tool for communication	10	9	8	7	6	5	4	3	2	1
6. I believe that A-Tutor® offer valuable E- learning activities	10	9	8	7	6	5	4	3	2	1
7. I find A-Tutor® is easy to use	10	9	8	7	6	5	4	3	2	1
8. I enjoy working with A-Tutor®	10	9	8	7	6	5	4	3	2	1
7. I would recommend a course that uses A-Tutor® to other students.	10	9	8	7	6	5	4	3	2	1

Part 6: Student Self-Directed Learning

Please indicate to what extent you agree or disagree with each of the following statements:	Your perceptions									
	Strongly Agree									Strongly Disagree
1. Overall, I have the ability to set an appropriate pace for learning.	10	9	8	7	6	5	4	3	2	1
2. Overall, I have the ability to develop a plan for completing course work.	10	9	8	7	6	5	4	3	2	1
3. Overall, I have knowledge of a variety of potential learning resources.	10	9	8	7	6	5	4	3	2	1
4. Overall, I have the ability to get assistance from various resources to discover new approaches to deal with learning problems.	10	9	8	7	6	5	4	3	2	1
5. Overall, I have the ability to set appropriate criteria to assess my own learning.	10	9	8	7	6	5	4	3	2	1
6. Overall, I have the ability to accept and use criticism.	10	9	8	7	6	5	4	3	2	1

Part 7: Student recommendation on using A-Tutor® as Web-based supplemental instruction

1. Please provide any comments or feedback for improving the use of A-Tutor® as Web-Based supplemental instruction tool.

Part 8: Student demographics

1. Gender ❑ Male ❑ Female

2. Age _____ years

3. Your marital status is: ❑ Single ❑ Married ❑ Other_____

4. How many children do you have?

    ❑ 0   ❑ 1   ❑ 2   ❑ 3   ❑ 4 or more

5. Your employment status is:

    ❑ Government officers; Status_____

    ❑ Business employee; Status_____

    ❑ Business owner   ❑ Farmers   ❑ Student

    ❑ Unemployed ❑ Other_____

6. You are:

    ❑ Part-time student

    ❑ Full-time student

Thank you very much for taking your valuable time to complete this survey.

agasksin (ผศ.สินีนุช ครุฑเมือง) | Inbox | Search | Help | Log-out

STOU Course
91704 วิจัยเพื่อการพัฒนาการส่งเสริมการเกษตร

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Tuesday November 17, 2009 - 21:42

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Announcements

ข่าวดี ข่าวด่วน!!! ขยายเวลาส่งกิจกรรมอีกครั้งจ้า
Wednesday March 25, 2009 - 11:59

วันนี้อุบาสวรรค์โทร.มาว่าเข้าไปส่งกิจกรรม e-learning ไม่ได้ เพราะ web. ถูกล็อค เนื่องจากหมดกำหนดส่ง แต่ตอนนี้ประธานชุดวิชา ฯ (รศ.ดร. พรทิพย์) ได้ขยายเวลาส่งกิจกรรมนี้ให้อีกครั้ง และได้เปิดล็อคให้แล้ว ใครยังไม่ได้ทำก็รีบๆทำซะนะ บอกต่อๆ กันด้วย--ภรณี

ขอเชิญแสดงความคิดเห็น
Tuesday March 17, 2009 - 20:41

ขอเชิญนักศึกษาทุกท่านแสดงความคิดเห็น ใน Forum ค่ะ

พรทิพย์

ชื่นชม
Monday March 2, 2009 - 14:11

การสัมมนาเสริมเมื่อวานนี้ พบว่า กลุ่ม 2 กทม.ตั้งใจดีมากทุกคน หวังว่าจะพยายามให้ดีขึ้นเรื่อยๆไปนะ อย่าหยุด จะเป็นกำลังใจให้ค่ะ--ภรณี

ขยายเวลาการทำกิจกรรม
Tuesday February 17, 2009 - 00:17

เนื่องจากมีนักศึกษาจำนวนมากที่ยังไม่ได้ทำกิจกรรมปัญหาการวิจัยและการวิจัยเชิงคุณภาพ ดังนั้น อาจารย์จึงขยายเวลาออกไปถึงวันที่ 15 มีนาคม 2552 ขอให้นักศึกษาที่ยังไม่ได้ทำกิจกรรมดังกล่าว โปรดดำเนินการด้วยค่ะ

พรทิพย์ อุดมสิน

ขอต้อนรับนักศึกษาทุกท่าน

ยินดีต้อนรับเข้าสู่การเรียน e-learning ชุดวิชาการวิจัยเพื่อการพัฒนาการส่งเสริมการเกษตร ชุดวิชานี้ มีเนื้อหาสาระค่อนข้างยาก แต่ e-learning จะมีส่วนช่วยให้นักศึกษาเข้าใจเนื้อหาสาระได้ดีขึ้น และยังช่วยให้ได้คะแนนในส่วนของคะแนนกิจกรรมและปฏิสัมพันธ์ด้วย

หากนักศึกษามีปัญหาหรือต้องการสอบถาม นักศึกษาสามารถติดต่ออาจารย์ประจำกลุ่มหรือติดต่อกับอาจารย์ทาง email address ที่ปรากฏ

รายชื่ออาจารย์ประจำกลุ่มและ email address

1. รศ.ดร. พรทิพย์ อุดมสิน
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ขอให้นักศึกษาทุกท่าน ประสบความสำเร็จในการเรียน

พรทิพย์ อุดมสิน

Polls
e-Learning มีประโยชน์ต่อท่านเพียงใด
มากที่สุด
▬▬ 28
มาก
■ 4
ปานกลาง
■ 4
น้อย
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น้อยที่สุด
0

Forum Posts
° ตอบคำถามค่ะ
° จำเป็น
° จำเป็น

Translate to: **English** | Thai

APPENDIX E

INSTROUCTOR SURVEY QUESTIONNAIRE

Instructor Survey Questionnaires

<u>Research Title:</u> *Student and Instructor Perceptions of Using A-Tutor® as the Learning Content Management System for Learning at a Distance in Thailand*

<u>Direction:</u> 1. Please check the appropriate box or complete the answer. There is no right or wrong answer. Please choose the answer which represents **your opinion**.
  2. The questions ask about you perceptions of using A-Tutor®. Use the scale below to answer the questions. If you strongly agree with the statement, circle the number 10; if you strongly disagree with the statement; circle the number 1. It you feel more or less agree with the statement, find the number between 1 and 10 that best describes you and circle that number
For example- Circle

10	9	8	⑦	6	5	4	3	2	1

Strongly Agree   Strongly Disagree
or Very comfortable   Very uncomfortable
or Very useful   not at all useful

Part 1: Teacher Characteristics

1. Gender ❑ Male ❑ Female

2. Age _____years

3. How many years have you been taught at STOU? _____years

4. How many years have you been employed at another institution in an academic capacity?

  _____years

5. How comfortable are you using computer technology? Circle the number that best represents your perception.

10	9	8	7	6	5	4	3	2	1

Very comfortable   *Very comfortable*

6. How comfortable are you using A-Tutor®? Circle the number that best represents your perception.

10	9	8	7	6	5	4	3	2	1

Very comfortable   *Very comfortable*

7. Do you have Internet access at home? ❑ Yes ❑ No

8. Where did you usually access the course website?

  ❑ Home ❑ Work ❑ Other _____

9. What is your home internet connection?

  ❑ Low-speed (Dial-up) ❑ Hi-speed (ADSL, Cable) ❑ LAN ❑ Other_____

10. What is your work internet connection?

   ❑ Low-speed (Dial-up)   ❑ Hi-speed (ADSL, Cable)   ❑ LAN ❑ Other_____

11. How long have you been teaching online courses?

   ❑ 1 semester ❑ 2 semester ❑ 3 semester ❑ 4 semester or more

12. What is your role in teaching via A-Tutor®

   ❑ Instructor   ❑ Co-instructor ❑ Other _____

13. How are you using A-Tutor®? (Check all that apply)

   ❑ As supplement to traditional distance course   ❑ As a tool for interact with students

   ❑ As a tool for teaching a portion of distance education course

   ❑ Other _____

14. In a typical week, I spent_____hours online for my course

   ❑ 3 hours or less ❑ 4-6 hours ❑ 7-8 hours ❑ 9-10 hours ❑ more than 11 hours

15. In a typical week, I e-mailed my students

   ❑ 0 time ❑ 1-2 times ❑ 3-4 times ❑ 5-6 times ❑ 7 or more times

16. In a typical week, I accessed to A-Tutor®

   ❑ 0 time ❑ 1-2 times ❑ 3-4 times ❑ 5-6 times ❑ 7 or more times

17. In a typical week, I participated in a "Chat" for my course

   ❑ 0 time ❑ 1-2 times ❑ 3-4 times ❑ 5-6 times ❑ 7 or more times

18. In a typical week, I participated in a "Forums" for my course

   ❑ 0 time ❑ 1-2 times ❑ 3-4 times ❑ 5-6 times ❑ 7 or more times

19. In a typical week, I participated in a "Group Forums" for my course

   ❑ 0 time ❑ 1-2 times ❑ 3-4 times ❑ 5-6 times ❑ 7 or more times

20. What do you think about A-Tutor®?

   10   9   **8**   7   **6**   5   **4**   3   **2**   **1**
   Very easy   *Very difficult*
   to learn and use   *to learn and use*

21. What is your overall satisfaction with A-Tutor®? Circle the number that best represents your perception.

   10   9   **8**   7   **6**   5   **4**   3   **2**   **1**
   Very satisfied   *Not at all satisfied*

22. How would you rate the support you received from STOU?

    ❑ Excellent ❑ Good ❑ Poor ❑ Very poor

23. How many A-Tutor® workshop that you attended?

    ❑ Never   ❑ 1   ❑ 2   ❑ 3 or more

24. Would you recommend A-Tutor® to your colleague?

    ❑ Yes ❑ No ❑ Other _____

Part 2: Technology Characteristics

For the picture of the A-Tutor® features, please see the picture in the last page of questionnaire.

1. Usefulness of A-Tutor® features.

    In this study, usefulness refers to individuals' perceptions that the technology or computer application will help them perform their jobs better (Davis, 1989).

    A-Tutor® has 21 features. Please indicate to what extend you agree or disagree with the usefulness of A-Tutor® features each listed below.

    Circle the number that best represents your perception.

Usefulness of A-Tutor® features	Your perceptions										Never Use this features
	Very useful									Not at all useful	
1. Content Navigation included course content	10	9	8	7	6	5	4	3	2	1	0
2. Related Topics	10	9	8	7	6	5	4	3	2	1	0
3. Users Online	10	9	8	7	6	5	4	3	2	1	0
4. Forums	10	9	8	7	6	5	4	3	2	1	0
5. Glossary	10	9	8	7	6	5	4	3	2	1	0
6. Chat	10	9	8	7	6	5	4	3	2	1	0
7. TILE Repository Search	10	9	8	7	6	5	4	3	2	1	0
8. Links	10	9	8	7	6	5	4	3	2	1	0
9. Tests & Surveys	10	9	8	7	6	5	4	3	2	1	0
10. Site-map	10	9	8	7	6	5	4	3	2	1	0
11. Export Content	10	9	8	7	6	5	4	3	2	1	0
12. My Tracker	10	9	8	7	6	5	4	3	2	1	0
13. Polls	10	9	8	7	6	5	4	3	2	1	0

14. Directory	10	9	8	7	6	5	4	3	2	1		0
15. Frequently Asked Question (FAQ)	10	9	8	7	6	5	4	3	2	1		0
16. Group	10	9	8	7	6	5	4	3	2	1		0
17. Reading List	10	9	8	7	6	5	4	3	2	1		0
18. File Storage	10	9	8	7	6	5	4	3	2	1		0
19. Blogs	10	9	8	7	6	5	4	3	2	1		0
20. ACollab	10	9	8	7	6	5	4	3	2	1		0
21. Announcements	10	9	8	7	6	5	4	3	2	1		0
Overall, I was satisfied with the usefulness of A-Tutor® features.	10	9	8	7	6	5	4	3	2	1		0

2. Ease of use and system operation characteristics

In this study, ease of use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989 p. 320).

Circle the number that best represents your perception.

Please indicate to what extent you agree or disagree with each of the following statements:	**Your perceptions**									
	Strongly Agree									**Strongly Disagree**
1. Learning to use A-Tutor® features were easy	10	9	8	7	6	5	4	3	2	1
2. A-Tutor® system is user-friendly.	10	9	8	7	6	5	4	3	2	1
3. The operation of A-Tutor® system is stable.	10	9	8	7	6	5	4	3	2	1
4. Communicating with students by using A-Tutor® were easy	10	9	8	7	6	5	4	3	2	1
5. Tracking students' assignment were easy	10	9	8	7	6	5	4	3	2	1
6. Teaching in an asynchronous online learning environment was easy	10	9	8	7	6	5	4	3	2	1
7. Receiving feedback from students was easy	10	9	8	7	6	5	4	3	2	1
Overall, I am satisfied with the ease of use and system operation of A-Tutor®	10	9	8	7	6	5	4	3	2	1

3. Form the above features; please rank three important and less important features of A-Tutor®
(Rank 1 = the most important or the most less important)

Important features of A-Tutor®   Less important features of A-Tutor®

1._____   1. _____

2._____   2. _____

3._____   3. _____

4. Which features that you want to removed from A-Tutor® and why?

    1. _____ Why? _____

    2. _____ Why? _____

    3. _____ Why? _____

5. Which features that you want to added to A-Tutor® and why?

    1. _____ Why? _____

    2. _____ Why? _____

    3. _____ Why? _____

6. What I most like about A-Tutor®?

    1. _____

    2. _____

    3. _____

7. What I least like about A-Tutor®?

    1. _____

    2. _____

    3. _____

Part 3: Interaction Characteristic

Please indicate to what extent you agree or disagree with each of the following statements:	Your perceptions									
	Strongly Agree									Strongly Disagree
1. A-Tutor® system makes it easy for me to discuss questions with my students.	10	9	8	7	6	5	4	3	2	1

2. I felt A-Tutor® enhanced communication with students.	10	9	8	7	6	5	4	3	2	1
3. A-Tutor® system makes it easy for me to share what I know with the learning community.	10	9	8	7	6	5	4	3	2	1
4. I felt A-Tutor® enhanced collaboration with students.	10	9	8	7	6	5	4	3	2	1
Overall, I was satisfied with the level of interactivity in the course.	10	9	8	7	6	5	4	3	2	1

Part 4: Using A-Tutor®

Please indicate to what extent you agree or disagree with each of the following statements:	Your perceptions									
	Strongly Agree									**Strongly Disagree**
1. Adequate monetary support for teaching online course was available.	10	9	8	7	6	5	4	3	2	1
2. Teaching online course counted toward tenure and promotion.	10	9	8	7	6	5	4	3	2	1
3. I had sufficient time to develop my online course.	10	9	8	7	6	5	4	3	2	1
4. I had sufficient time to teach my online course.	10	9	8	7	6	5	4	3	2	1
5. Intellectual property rights within my courses were respected.	10	9	8	7	6	5	4	3	2	1
6. Technical supports were provided by STOU.	10	9	8	7	6	5	4	3	2	1
7. Administrative supports were provided by STOU.	10	9	8	7	6	5	4	3	2	1
8. Clerical supports were provided by STOU	10	9	8	7	6	5	4	3	2	1
9. Planning an online course takes much time.	10	9	8	7	6	5	4	3	2	1
10. Teaching online was easier.	10	9	8	7	6	5	4	3	2	1
11. Teaching online environment takes much time.	10	9	8	7	6	5	4	3	2	1
12. Flexible working hours were provided by STOU.	10	9	8	7	6	5	4	3	2	1
13. Flexible working conditions were provided by STOU.	10	9	8	7	6	5	4	3	2	1
14. Sufficient technical expertise was provided by STOU.	10	9	8	7	6	5	4	3	2	1
15. On-going workshops were provided by STOU.	10	9	8	7	6	5	4	3	2	1

Part 5: Instructor recommendation on using A-Tutor® as Web-based supplemental instruction

1. Please provide any comments or feedback for improving the use of A-Tutor® as Web-Based supplemental instruction.

Thank you very much for taking your valuable time to complete this survey.

agasksin (ผศ.ลินินช ครุฑเมือง) | Inbox | Search | Help | Log-out

STOU Course
91704 วิจัยเพื่อการพัฒนาการส่งเสริมการเกษตร

STOU

| Home | Manage |

Tuesday November 17, 2009 - 21:42

Home

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Forums

Glossary

Chat

TILE Repository Search

Links

Tests & Surveys

Site-map

Export Content

My Tracker

Polls

Directory

Frequently Asked Questions (FAQ)

Groups

Reading List

File Storage

Blogs

ACollab

Content Navigation

Home
— 1 ปฐมนิเทศชุดวิชา
— 2 ปฏิทินการศึกษา
— 3 การประเมินผลการศึกษา
— 4 แผนกิจกรรมประจำชุดวิชา
— 5 แนวคิดเกี่ยวกับการวิจัย
— 6 กระบวนการวิจัยทางส่งเสริ...
— 7 การพัฒนา & ประเมินปั...
— 8 การทบทวนวรรณกรรม
— 9 กรอบแนวคิดการวิจัยและสม...
— 10 การออกแบบการวิจัย
— 11 ประชากรและกลุ่มตัวอย่าง
— 12 การสร้างเครื่องมือการวิจัย
— 13 การเก็บรวบรวมข้อมูล
— 14 การใช้สถิติในการวิจัย
— 15 การออกแบบผ่านลงข้อมูล
— 16 การแปลผล สรุปผล และเขียน
— 17 กิจกรรมปัญหาการวิจัย (เฉ...
— 18 **การติดต่อสื่อสาร**
— 19 แบบสำรวจความคิดเห็น
— 20 DOWNLOAD โปรแกรม FlashPlayer
— 21 คู่มือการใช้ Blogs และ F...

Related Topics
None Found.

Users Online
👤 agasksin (ผศ.ลินินช ครุฑเมือง)
Guests are not listed

Glossary
N/A

Search

Match:
○ All words
◉ Any word
[Search]

Polls
e-Learning มีประโยชน์ต่อท่านเพียงใด
มากที่สุด
■■■ 28
มาก
น้อยกลาง
■ 4
น้อย
, 0
น้อยที่สุด
, 0

Forum Posts
° ตอบคำถามค่ะ
° จำเป็น
° จำเป็น

Announcements

ข่าวดี ข่าวด่วน!!! ขยายเวลาส่งกิจกรรมอีกครั้งจ้า
Wednesday March 25, 2009 - 11:59

วันนี้อุบาสารคโทร.มาว่าเข้าไปส่งกิจกรรม e-learning ไม่ได้ เพราะ web. ถูกล็อค เนื่องจากหมดกำหนดส่ง แต่ตอนนี้ประธานชุดวิชา ฯ (รศ. ดร. พรทิพย์) ได้ขยายเวลาส่งกิจกรรมนี้ให้อีกครั้ง และได้เปิดล็อคให้แล้ว ใครยังไม่ได้ทำกิริบทำฟซฟซนะ บอกต่อๆ กันด้วย--ภรณี

ขอเชิญแสดงความคิดเห็น
Tuesday March 17, 2009 - 20:41

ขอเชิญนักศึกษาทุกท่านแสดงความคิดเห็น ใน Forum ค่ะ

พรทิพย์

ชื่นชม
Monday March 2, 2009 - 14:11

การสัมมนาเสริมเมื่อวานนี้ พบว่า กลุ่ม 2 กหม. ตั้งใจดีมากทุกคน หวังว่าจะพยายามให้ดีขึ้นเรื่อยๆไปนะ อย่าหยุด จะเป็นกำลังใจให้ค่ะ--ภรณี

ขยายเวลาการทำกิจกรรม
Tuesday February 17, 2009 - 00:17

เนื่องจากมีนักศึกษาจำนวนมากที่ยังไม่ได้ทำกิจกรรมปัญหาการวิจัยและการวิจัยเชิงคุณภาพ ดังนั้น อาจารย์จึงขยายเวลาออกไปถึงวันที่ 15 มีนาคม 2552 ขอให้นักศึกษาที่ยังไม่ได้ทำกิจกรรมดังกล่าว โปรดดำเนินการด้วยค่ะ

พรทิพย์ อุดมสิน

ขอต้อนรับนักศึกษาทุกท่าน

ยินดีต้อนรับสู่การเรียน e-learning ชุดวิชาการวิจัยเพื่อการพัฒนาการส่งเสริมการเกษตร ชุดวิชานี้ มีเนื้อหาสาระค่อนข้างยาก แต่ e-learning จะมีส่วนช่วยให้นักศึกษาเข้าใจเนื้อหาสาระได้ดีขึ้น และยังช่วยให้ได้คะแนนในส่วนของคะแนนกิจกรรมและปฏิสัมพันธ์ด้วย

หากนักศึกษามีปัญหาหรือต้องการสอบถาม นักศึกษาสามารถติดต่ออาจารย์ประจำกลุ่มหรือติดต่อกับอาจารย์ทาง email address ที่ปรากฏ

รายชื่ออาจารย์ประจำกลุ่มและ email address

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jindaklibtong@hotmail.com

ขอให้นักศึกษาทุกท่าน ประสบความสำเร็จในการเรียน

พรทิพย์ อุดมสิน

Translate to: **English** | Thai

APPENDIX F

STUDENT FOGUS GROUP INTERVIEW QUESTIONS

Focus group interview: questionnaire outline

<u>Research Title:</u>   *Student and Instructor Perceptions of Using A-Tutor as the Learning Content Management System for Learning at a Distance in Thailand*

Directions to Begin the Interview:

1. Discuss and read the consent form to the interviewee.
2. Explain that this is a research project being conducted by Sineenuch K Sanserm, Ph.D. student in Department of Agricultural Education, Communication and Leadership, Oklahoma State University.
3. Explain the motives and intentions for conducting this research (the interview is to explore student opinion about using online instructional tools and video lectures in hybrid course).
4. Explain what is benefit of this study (Improved course for future participants), but there is no direct benefit for participating in the study.
5. Ask for any questions before starting and recording.

Consent Information:

Sineenuch K. Sanserm, Ph.D. student from Department of Agricultural Education, Communication and Leadership, OSU is conducting a research on **"*Student and Instructor Perceptions of Using A-Tutor as the Learning Content Management System for Learning at a Distance in Thailand*"**. This study is designed to evaluate student and instructor's perception of using supplemental Web-based instruction for graduate students in distance learning system.

I would like to inform you that:

1. Your participation in this study is **voluntary** and that you may withdraw from the study at any time with no penalty. If you withdraw, all your data will be destroyed immediately and you will not be contacted by the researchers.
2. You may be asked to participate in **the focus group interview** with the researcher working on the project. The interview will be tape-recorded for accuracy.
3. Your responses to **the focus group interview** are **confidential** and the only people who will see the documents are Sineenuch K Sanserm and my commitee.
4. All of the data collected will be kept by Dr. Kathleen Kelsey in a **locked storage cabinet** for one years following the study and will be destroyed after that time.
5. There are **no harmful effects** by participating in this study.

If you have questions regarding this study please contact the following people:

Sineenuch K. Sanserm, Ph.D. Candidate
Department of Agricultural Education, Communication and Leadership, College of Agricultural Sciences and Natural Resources, Oklahoma State University
448 Agricultural Hall, Stillwater, Ok 74078
(405) 714-3155
Sineenuch.k.sanserm@okstate.edu

Dr. Shiela Kennison, IRB Chair
219 Cordell North, Stillwater, OK 74078
(405) 744-1676
 irb@okstate.edu

1. Student: focus group interview questions

Turn on the tape/video recorder.

1. Did you have problems access to A-Tutor®?
    [Yes] **[No]** If "Yes," please explain:_____

2. How did A-Tutor® affect your interaction with the instructor?

3. How did A-Tutor® affect your to interact with other students?

4. How did A-Tutor® affect your learning?
    4.1 Does A-Tutor® support Self-directed learning?

    4.2 Does A-Tutor® detracts from Self-directed learning?

5. What type media do you prefer to learn most? (Audio, Video, Print)

6. Which features of A-Tutor® that you perceived it help you to learn best?

7. Which features of A-Tutor® that you perceived it not useful?

8. Let's think about your course website for a minute. Would you like to make any change to your course website?

    8.1 What features would you like to see added to A-Tutor®?

    8.2 What features would you like to see removed from A-Tutor®?

9. In your opinion, should STOU require all online courses to be delivering using A-Tutor® why? or why not?

10. What would you suggest to improve A-Tutor®?
    _____
    _____
    _____

11. What other thoughts, feelings, or questions do you have about learning online by use a-Tutor®?

Closing

Thank you very much for your time today.
Time Taken to Complete the focus group interview: _____ Minutes.

APPENDIX G

INSTROUCTOR FOGUS GROUP INTERVIEW QUESTIONS

Focus group interview: questionnaire outline

<u>Research Title:</u>   *Student and Instructor Perceptions of Using A-Tutor as the Learning Content Management System for Learning at a Distance in Thailand*

Directions to Begin the Interview:
1. Discuss and read the consent form to the interviewee.
2. Explain that this is a research project being conducted by Sineenuch K Sanserm, Ph.D. student in Department of Agricultural Education, Communication and Leadership, Oklahoma State University.
3. Explain the motives and intentions for conducting this research (the interview is to explore student opinion about using online instructional tools and video lectures in hybrid course).
4. Explain what is benefit of this study (Improved course for future participants), but there is no direct benefit for participating in the study.
5. Ask for any questions before starting and recording.

Consent Information:
Sineenuch K. Sanserm, Ph.D. student from Department of Agricultural Education, Communication and Leadership, OSU is conducting a research on **“*Student and Instructor Perceptions of Using A-Tutor as the Learning Content Management System for Learning at a Distance in Thailand*”**. This study is designed to evaluate student and instructor's perception of using supplemental Web-based instruction for graduate students in distance learning system.

I would like to inform you that:
1. Your participation in this study is **voluntary** and that you may withdraw from the study at any time with no penalty. If you withdraw, all your data will be destroyed immediately and you will not be contacted by the researchers.
2. You may be asked to participate in **the focus group interview** with the researcher working on the project. The interview will be tape-recorded for accuracy.
3. Your responses to **the focus group interview** are **confidential** and the only people who will see the documents are Sineenuch K Sanserm and my commitee.
4. All of the data collected will be kept by Dr. Kathleen Kelsey in a **locked storage cabinet** for one years following the study and will be destroyed after that time.
5. There are **no harmful effects** by participating in this study.

If you have questions regarding this study please contact the following people:

Sineenuch K. Sanserm, Ph.D. Candidate	Dr. Shiela Kennison, IRB Chair
Department of Agricultural Education, Communication and Leadership, College of Agricultural Sciences and Natural Resources, Oklahoma State University	219 Cordell North, Stillwater, OK 74078
448 Agricultural Hall, Stillwater, Ok 74078	(405) 744-1676
(405) 714-3155	irb@okstate.edu
Sineenuch.k.sanserm@okstate.edu	

2. Instructor: focus group interview questions

Turn on the tape/video recorder.

1. What do you think are the greatest benefits of A-Tutor®? (Accessibility, flexibility, student centered, collaboration, others)

2. What do you think are the greatest drawbacks of A-Tutor®? (Time intensive, lack of technological skill: instructor, student, technical support, others)

3. Aside from the technological aspects, has the A-Tutor® affected your teaching methods? In what ways?

4. Have there been any issues that have developed while implementing A-Tutor®?

5. Have there been any issues that have arisen while teaching via A-Tutor®?

6. Let's think about your course website for a minute. Would you like to make any change to your course website?

    6.1 What features would you like to see added to A-Tutor®?

    6.2 What features would you like to see removed from A-Tutor®?

7. In your opinion, should STOU require all online courses to be delivering using A-Tutor® why? or why not?

8. What would you suggest to improve a-Tutor®?

    _____
    _____
    _____

9. What other thoughts, feelings, or questions do you have about teaching online by use a-Tutor®?

Closing

Thank you very much for your time today.

Time Taken to Complete the focus group interview: _____ Minutes.

VITA

Sineenuch Khrutmuang Sanserm

Candidate for the Degree of

Doctor of Philosophy

Thesis: STUDENT AND INSTRUCTOR PERCEPTIONS OF USING ATUTOR
AS THE LEARNING CONTENT MANAGEMENT SYSTEM FOR LEARNING AT A
DISTANCE IN THAILAND

Major Field: Agricultural Education

Biographical:

Education: Bachelor of Science in Agricultural Extension, Chiang Mai University,
Chiang Mai, Thailand, 1993; Master of Science in Agricultural Extension, Chiang
Mai University, Chiang Mai, Thailand, 1995; and Doctor of Philosophy in
Agricultural Education, Oklahoma State University, Stillwater, Oklahoma, 2010

Experience: Assistant Professor, School of Agricultural Extension and Cooperatives,
Sukhothai Thammathirat Open University, Thailand; Academic Staff, Kasetsart
University, Thailand; Officer, Department of Agricultural Extension, Thailand

Professional Memberships: Agricultural Knowledge Management for Development
Center, Thailand

Name: Sineenuch Khrutmuang Sanserm   Date of Degree: December, 2010

Institution: Oklahoma State University   Location: Stillwater, Oklahoma

Title of Study: STUDENT AND INSTRUCTOR PERCEPTIONS OF USING ATUTOR
          AS THE LEARNING CONTENT MANAGEMENT SYSTEM FOR
          LEARNING AT A DISTANCE IN THAILAND

Pages in Study: 249   Candidate for the Degree of Doctor of Philosophy

Major Field: Agricultural Education

Scope and Method of Study: The purpose of this study was to examine students' and
          instructors' perceptions of using ATutor as the learning content management
          system (LCMS) in e-learning courses at a distance university in Thailand. The
          population was composed of all 222 graduate students (census) and 10 instructors
          from an agricultural college at a major university in Thailand. Survey and focus
          group interview were used to collect data. Descriptive statistics and the Pearson
          Product Moment Correlation Coefficient were used to analyze data provided by
          respondents.

Findings and Conclusions: Gender, age, comfort of using computer and ATutor, time
          spent online, place and frequency accessing ATutor, internet access and
          connection had significant and positive correlation to students' perception of
          using ATutor. E-mail student, chat, forum, and group forum participated, ATutor
          satisfaction, online teaching experience, role in teaching, support from the
          university, and workshop attended had significant positive correlation to
          instructors' perception of using ATutor. The overall mean scores of students'
          perception of the usefulness, ease of use, interaction and communication, e-
          learning andragogical design, online learning, and self-directed learning ranged
          from 6.84 to 7.49 out of 10, and standard deviations ranged from 1.47 to 1.95.
          The overall mean scores of Instructors' perception of the usefulness, ease of use,
          interaction and communication, and teaching online by using ATutor ranged from
          5.70 to 7.40 out of 10, and standard deviations ranged from 1.35 to 2.00. All six
          student perception variables and all four instructor perception variables had
          positive and significant correlation. The most important feature for students was
          content navigation and for instructors was announcement. Both students and
          instructors reported that poll was the least important feature. Most students and
          instructors indicated that no features should be added or removed from ATutor.
          ATutor supports self-directed learning because it enhances students ability to set
          an appropriate pace for learning and get assistance from various resources. In this
          context, ATutor detracted from self-directed learning due to course schedule and
          technological problems. Students and instructors encourage the university to
          adopt ATutor for all distance learning courses.

ADVISER'S APPROVAL: Kathleen D. Kelsey