E-learning in English classroom: Investigating factors impacting on ESL (English as Second Language) college students' acceptance and use of the Modular Object-Oriented Dynamic Learning Environment (Moodle)

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Iowa State University

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E-learning in English classroom: Investigating factors impacting on ESL (English as Second Language) college students’ acceptance and use of the Modular Object-Oriented Dynamic Learning Environment (Moodle)

by

Jing Liu

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Education (Curriculum and Instructional Technology)

Program of Study Committee:
Ana-Paula Correia, Major Professor
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Tammy Slater
Amy Hutchison

Iowa State University
Ames, Iowa
2013

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I would like to especially thank Xuan (Roger) Teng for allowing me to collect data from students in his classes.

Finally, thanks to my family for their encouragement, patience, respect, and love.
ABSTRACT

Modular Object-Oriented Dynamic Learning Environment (Moodle) is an open source Learning Management System (LMS) receiving more and more popularity in higher education. Many academic departments in colleges and universities employ Moodle to economically improve course management. English as Second Language (ESL) programs in universities have also adopted Moodle. However, successfully implementing Moodle in ESL courses requires ESL students to accept the system. The Unified Theory of Acceptance and Use of Technology (UTAUT) model was used as a framework to investigate the factors influencing ESL college students’ acceptance and use of Moodle in their English classes. Additionally, this study aimed at representing ESL college students’ perspectives on what factors impacted their acceptance or rejection of Moodle. Thirteen ESL college students participated in this study, and four focus group discussions were conducted. Participants expressed five major factors that influenced the adoption of Moodle in ESL grammar and reading classes. These factors were performance expectancy, effort expectancy, social influence, facilitating conditions, and former practice. The participants attribute Moodle for improving their study efficiency and learning skill, providing them with multiple learning resources and giving them emotional motivation. This performance expectancy was the most important reason for them in adopting Moodle. They cited Moodle’s ease of use, or effort expectancy, as the second significant reason for adoption. Additionally, social influence and facilitating condition were considered supplemental factors influencing their acceptance of Moodle. Besides these four constructs in the UTAUT model, some participants proposed that
former practice, or their experience with Moodle or other learning management systems, enabled them to adopt Moodle more quickly. The findings provide beneficial suggestions for educational administrators and course management developers who have interest in using Moodle to teach English courses to ESL students.
CHAPTER 1 INTRODUCTION

In recent years, educators throughout the world have increasingly used information technology to prepare for classes, to deliver instruction, and to administer student information (Harasim, 2000). Meanwhile, online learning, also called e-learning, along with various integrations of e-learning with traditional classes is developing rapidly. Flip teaching, or flipped classroom, is a good example of the integration of e-learning and traditional learning (Brunsell & Horejsi, 2013). The term “flipped classroom” means the teaching method flips, or reverses from the traditional method. In a flipped classroom, the instruction is delivered online so that class time can be efficiently used to do homework, exercises, projects, discussions, or other interactive activities that illustrate the conceptual learning content. This innovation has students engaged in class and provides them with more opportunity to gain practical skills and knowledge. For instance, students in flipped classrooms may preview lessons via video or audio and then accomplish various classroom activities and exercises under teacher supervision.

Among the existing technology platforms available for providing a flipped classrooms, learning management systems (LMSs) stand out as the most common because of their advantage in delivering course content and managing the enormous amount of information online courses entail (Abdelraheem, 2012). Particularly, the open source Moodle (Modular Object-Oriented Dynamic Learning Environment) is the most popular LMS; thus far, it has 19,234 registered sites and more than 20,000 users (Machado & Tao, 2007). The University of California at Los Angeles (UCLA)
announced its use of Moodle as the single open source platform for its common collaboration and learning environment since 2006 (Machado & Tao, 2007).

As some researchers suggested, the widespread popularity of Moodle to a large extent depends on its advantages. For example, there is no license fee for Moodle, and to be able to use Moodle, higher education institutes and K-12 schools only need to modify its system to fit their procedures and policies. Additional advantages that account for the wide adoption of Moodle (see Table 1) involve economic, technological, pedagogic, and philosophic benefits. Furthermore, teachers’ and students’ perceptions of using Moodle for teaching and learning have been thoroughly investigated (Awang & Darus, 2012; Cigdemoglu, Arslan, & Akay, 2011; Iwasaki, Tanaka, & Kubota, 2011; Schoonenboom, 2012; Wang, Doll, Deng, Park, & Yang, 2013). Cigdemoglu et al. (2011), for example, conducted for the first time in a private university in Ankara, Turkey, a qualitative study of instructors’ attitudes towards and experiences with Moodle in their classes. The researchers had coded the interviewing answers into eight themes: (a) Need to Use; (b) Learning and Interest; (c) Expectations; (d) Grade-Book and News Forum; (e) Students’ Level of Participation; (f) Students’ Impression; (g) Advantages; and (h) Disadvantages. This in-depth investigation revealed that “the more an instructor has used the tool, the more beneficial they find using the tool” (Cigdemoglu et al., 2011, p.795). In another study, Iwasaki et al. (2011) attempted to find out how instructors used LMSs in different types of classes. They conducted surveys among instructors of different subjects who utilized LMS heavily in courses. Based on the data, researchers classified these courses
into three categories—knowledge construction, knowledge transmission, and mixed—and matched respondents’ teaching strategies using LMSs with these categories.

Table 1.1 Four major domains of reasons for the increase of Open Source Technology in Higher Education

<table>
<thead>
<tr>
<th>Domain</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>- Eases the burden of software license management.</td>
</tr>
<tr>
<td></td>
<td>- Lower cost on acquiring and running than proprietary software</td>
</tr>
<tr>
<td></td>
<td>- Independence</td>
</tr>
<tr>
<td></td>
<td>- Generic product</td>
</tr>
<tr>
<td>Technological</td>
<td>- Reliable and secure technology</td>
</tr>
<tr>
<td></td>
<td>- Open architecture</td>
</tr>
<tr>
<td></td>
<td>- Inter-operational</td>
</tr>
<tr>
<td></td>
<td>- Open but well protected copyrights and licenses</td>
</tr>
<tr>
<td>Pedagogical</td>
<td>- Allow the use of different learning scenarios</td>
</tr>
<tr>
<td></td>
<td>- Web-based learning</td>
</tr>
<tr>
<td></td>
<td>- Modular and multilingual</td>
</tr>
<tr>
<td></td>
<td>- Variety of tools</td>
</tr>
<tr>
<td>Philosophic</td>
<td>- Collaborative approach</td>
</tr>
<tr>
<td></td>
<td>- Anti-monopolistic</td>
</tr>
<tr>
<td></td>
<td>- Free as education</td>
</tr>
</tbody>
</table>

Note. Adapted from Machado & Thompson (2005).

Iwasaki et al.’s (2011) findings suggested that instructors who based their courses on a constructivist philosophy believed that knowledge is constructed when information comes into contact with existing knowledge that has been developed by experiences. Results indicated that in courses using a constructivist approach, interactive features in LMSs were used to enhance students’ active learning; courses that employed traditional ways of teaching tended to use quizzes and project assignment features in
LMSs to strengthen students’ basic knowledge and practical skills; instructors in mixed courses took advantage of both “construction” classes and “transmission” classes, using the communication feature in LMSs to cultivate students’ collaborative ability and independent learning ability.

Related research studies explored effective ways of integrating Moodle to achieve better instructor experiences. For example, Wang et al. (2013) looked at the effect of LMSs configurability (embedded software features that enable users to realize certain functions) on instructors’ “perceived benefits (teaching effectiveness, productivity, and student learning)” (p. 149). The result of this study suggested that LMSs which possess higher levels of configurability in their interface, interaction, and content would enable teachers to use effective teaching methods as well as enhance the students’ learning process.

Recent studies on Moodle also explore students’ perception of LMSs (Abdelraheem, 2012; Carvalho, Areal, & Silva, 2011; Escobar-Rodriguez & Monge-Lozano, 2012; Green, Inan, & Denton, 2012; Marchewka, Liu, & Kostiwa, 2007). Several examined students’ acceptance and satisfaction with LMSs. Marchewka et al. (2007), for example, found that there was no obvious relationship between college students’ acceptance of Blackboard in their class and their age and gender; what were more significant, on the other hand, were the collaborating characteristics Blackboard encompassed and the support the university’s administration and professors provided. Green et al. (2012) found that “the more students view LMS as useful, the higher their satisfaction with the system” and also “technical assistance has contributed to students’
satisfaction with LMS” (p.193). Escobar-Rodriguez and Monge-Lozano (2012), in a
similar vein, claimed that “the easier students perceived LMSs, the more willingly
students accepted LMSs” and that “teachers’ support in using LMSs had a positive effect
on students’ acceptance of LMSs” (p.1091). Other studies focused on students’ opinions
about the usefulness of the Moodle features for their online learning. In his study about
students’ perception of the interactive quality of Moodle, Abdelraheem (2012) found
that students attributed their success in courses using LMSs to the way it enabled
interaction. In other words, the more interactive the features, the more successful
students were. In another study (Carvalho et al., 2011), students compared the features of
Blackboard with those of Moodle, and echoing Abdelraheem, the results showed that the
more integrated the features of LMSs were, the more likely students found LMSs to be
useful.

These previous research studies about teachers’ and students’ perceptions of
LMSs provide useful practices for investigating teachers’ and students’ ideas and
opinions about this newly emerged technology.

More and more of these studies focus on international students in U.S. higher
education (Mamiseishvili, 2012). According to the report of the Institute of International
Education (IIE) (2012), there were 764,495 international students enrolled in the U.S.
higher education in academic year of 2011-2012, a 5.7 percent increase from the
previous year. The majority of international students were non-native English speakers,
or English as a Second Language (ESL) students (IIE, 2012). As higher education in U.S.
continues to attract international students and expand into the global market, this
growing community deserves attention because its members are significant contributors to the academic communities of practice in the U.S.

Much research focuses on ESL students’ experiential issues such as stress, alienation, and difficulties in adjusting to the host culture, issues identified as factors influencing their academic experience (Cadman, 2000; Perrucci & Hu, 1995; Ridley, 2004; Robertson, Line, Jones, & Thomas, 2000). Across this research, many have mentioned the problem of adaptation to new learning environments and systems, a problem identified as yet another important factor affecting ESL students’ academic experience. However, this topic has not yet been fully explored.

As many English classes for ESL students in U.S. universities and colleges have utilized LMSs to manage both online and face-to-face courses (Grgurovic, 2011), it is important to know ESL students’ perspectives, feelings, and attitudes about LMSs and why they accept or do not accept them in the English classroom. If they hold an adverse attitude toward using LMSs, they could be left behind and perhaps even fail their English classes, preventing their future academic success in higher education in the U.S.

A full understanding of why the ESL students accept (or reject) and use (or don’t use) LMSs is important to both English teachers and university administrators because it may help to design and develop high-quality English courses to support ESL students’ English learning with LMSs, to improve their learning environments, and to provide them with more opportunities to succeed in academic settings.
Purpose of the Study

The purpose of this study is to investigate factors that impact ESL students’ interaction with Moodle using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The UTAUT model was created based on previous classic technology acceptance models and has been validated in a longitudinal study with nearly 70 percent explanation power (Venkatesh, Morris, G. Davis, & F. Davis, 2003), making it a concise tool for measuring the possibility of users adopting a new technology. This model is commonly deployed to account for a user’s intention and subsequent use of technology. It involves four constructs as the key factors that determine usage intention and behavior, namely performance expectancy, effort expectancy, social influence, and facilitating condition. The constructs and mediating factors in the UTAUT model serve to shape the research questions in this study.

Additionally, this study aims to describe ESL students’ own reasons for their acceptance or rejection of Moodle, and in this way, the study stresses students’ feelings and attitudes towards using Moodle specifically and open source LMSs generally. Students’ perspectives may fall into the UTAUT model or show different constructs and mediating factors.

Research Questions

Centering on the UTAUT model, the research questions were formed to examine the perspectives of ESL students on the factors impacting their acceptance of Moodle. They are shown, as follows:

1. Does ESL learners’ “performance expectancy” influence their adoption of
Moodle in the English classroom?

2. Does ESL learners’ “effort expectancy” influence their adoption of Moodle in the English classroom?

3. What impact can “facilitating conditions” have on ESL learners’ adoption of Moodle in the English classroom?

4. What is the effect of “social influence” on ESL learners’ adoption of Moodle in the English classroom?

5. What other factors, if any, drive ESL learners’ adoption of Moodle in the English classroom?

Significance of the Study

Many higher education ESL programs have already adopted or are about to adopt open source LMSs as a computer-assisted language-learning (CALL) tool in their e-learning classes. As growing numbers of ESL students enroll in U.S. universities and colleges, this community deserves more attention because it contributes to the academic practices in the U.S. It is necessary to know more about students’ adaptation to a new country like the U.S. both in their academic study and their daily lives in order to help them succeed in their studies. Investigating ESL learners’ reasons for adopting open-source LMSs can increase the knowledge about ESL learners’ adoption intention and behavior of an important learning system they will use in the U.S. By applying the Unified Theory of Acceptance and Use of Technology, this study is conducted with strong theoretical underpinnings. Also, through focus group discussions, this research
can offer richer results by helping the field know more precisely about ESL learners’ acceptance and use of learning technologies.
CHAPTER 2 TECHNOLOGY ADOPTION AND ACCEPTANCE MODELS

Definition of Terms

**Definition of E-learning**

E-learning, a new way of study different from traditional face-to-face learning, is defined as an innovative way of conducting learning activity at flexible times and places through the Internet (Sparacia, Cannizzaro, D. D’Alessandro, M. D’Alessandro, Caruso, & Lagalla, 2007). Normally e-learning includes most kinds of electronically supported learning and teaching (Govindasamy, 2002). Web-based learning, Internet-based learning, and computer-based learning are all frequently used terms meaning e-learning (Khan, 2001). More precisely, e-learning encompasses both Internet-based learning and computer-based learning, which consist of components of online learning (see Figure 1).

![Figure 1. Scope of E-Learning. Adapted from Bachman (2000).](image-url)
There are eight key areas employing e-learning for education or training: K-12 schools, higher education, corporations, government agencies, nonprofit organizations, and networks as well as homes and public spaces (Rosenberg, 2001).

E-learning has several advantages over traditional learning (Douglas & Der Vyver, 2004). First, e-learning offers an innovative way of delivering instruction through a wide-spread environment. By this means, e-learning has substantially improved learning efficiency and generated more opportunities for a wider range of audience, those have access to computers and the Internet (Liao & Lu, 2008). Secondly, it has changed the traditional relationship between teachers and students, a relationship in which teachers are in the dominant position while students are passive receivers of whatever teachers deliver. In the environment of e-learning, students can participate in class in an interactive way by taking advantage of mediated technologies such as role-playing, video-conferencing, online references, personalized coaching, project teams, chat room, discussion board, and so forth (Liao & Lu, 2008).

Learning Management System as an Embodiment of E-learning

An LMS is a software system that enables the management and delivery of online and instructor-led training content to learners. Most LMSs are web-based to facilitate anytime, anyplace, and any-pace access to learning content and administration (Black, Beck, Dawson, Jinks, & DiPietro, 2007; Georgouli, Skalkidis, & Guerreiro, 2008). E-learning is the foundation for the combination of LMSs, organization of learners, teachers’ interaction with learners as well as content design and development. Conceptually speaking, LMSs can be categorized into computer-based learning or
Internet-based learning (Salmon, 2000). Other related terminology referring to similar concepts as LMSs include Learning Content Management System (LCMS) and Content Management System (CMS). LCMS is a software system that provides a multi-user environment where instructors, technology developers, instructional designers, and subject matter experts can share the same online message platform, on which they can generate, save, recycle, and disseminate teaching and learning content. CMS is a software system used to store course materials online. It also has functions such as connecting students with their class peers, tracking student performance, and saving students’ submissions of assignments and corresponding grades. Simply put, CMS is a helpful administrative tool for instructors to reduce their workload. The major advantage of LMSs over LCMSs and CMSs is twofold: the emphasis on learning management in LMSs has enabled it to bring a better individual learning experience; LMSs do better in organizing large-scale courses which contain multiple sections (Ceraulo, 2005).

There are three types of classes employing LMSs. One is the blended class, which integrates traditional face-to-face instruction method with the assistance of computers; another is the distance online class, which depends on computers to deliver instruction to students in different locations; the last one is the hybrid class, which is a transitional sort of class between blended classes and distance classes because it will assign part of the class to a classroom environment and the other part of class to distance conditions (Almrashdah, Sahari, Zin, & Alsmadi, 2010; Soeiro, de Figueiredo, & Gomes, 2012; Woods, Baker, & Hopper, 2004).
There are many benefits to employing blended classes. The integration of traditional face-to-face instruction and computer-mediated instruction helps instructors avoid the lack of social interaction in the distance class, and at the same time this integration improves the students’ learning effectiveness through richer information contained in multimedia tools. In addition, it increases the level of the students’ active learning through real-life experiences and practice using technologies provided through computers (Osguthorpe & Graham, 2003). For example, an accounting professor in Brigham Young University let students obtain tool-related skills and technical information by providing them online modules to manipulate (Cottrell & Robison, 2003).

For a distance class, the major advantage lies in the access and flexibility computer-mediated instruction can provide to students. This form of study is particularly useful for adult learners who have extra commitments to work and family while trying to pursue continuing education. Moreover, it provides to students a more cost-effective way of learning because of cheaper tuition and their saving on transportation. Additionally, there is virtually no limitation for class size (Corrine, 2000).

As for hybrid classes one advantage is that they combine advantages of both face-to-face interaction and those of online class learning (Edling, 2000). More importantly, LMSs can help teachers manage face-to-face class time more effectively. For instance, when teaching a hybrid course, instructors can transfer quizzes and exams into LMSs, allowing for better focus of class time on lectures and class activities (Papo, 2001). Sometimes the boundary between hybrid classes and blended classes is quite obscure because hybrid classes may use assistance from computers during classroom
time, while blended classes may borrow the assistance of computers after class to do online homework as well as quizzes and exams.

**Open Source LMSs**

As mentioned earlier, higher education has employed various LMSs to manage e-learning data for teachers and students because of the widespread usage of e-learning among universities and colleges. Those LMSs are released under Open Source Software (OSS) licenses and are classified as open source LMSs. According to regulations, software with OSS licenses must be developed, tested, and improved by public collaboration and distributed with the notion that all information and data in it should be shared with the public for the convenience of modifying and improving it. Users have the freedom to adapt OSS technologies to the form that they think is applicable without suffering license infringement charges (Feller & Fitzgerald, 2000). There is no initial cost to purchase the open source software and no license fees.

A few open source LMSs, such as Modular Object-Oriented Dynamic Learning Environment (Moodle), have been adopted by universities around the world (Awang & Darus, 2012). One of the underlying reasons for this adoption is that there is little difference in function and characteristics between open source and commercial LMSs. Under this circumstance, higher education administrations institutes prefer open source LMSs because of cost and effectiveness (Machado & Thompson, 2005). Machado and Thompson (2005) suggested another important reason for higher education’s adoption of open source LMSs. They stated that these systems are universally accessible and subject to modifications freely. In their study conducted in 2005, Machado and Thompson found
that most universities using open source LMSs ranked the quality of inter-operability as the top reason for employing open source LMSs.

Theoretical Framework of Learner’s Adoption of Information Technology

A Learning Management System (LMS), such as Moodle, is a branch of information systems. Understandably, in examining ESL learners’ acceptance of Moodle in their English classes, it is important to first understand theories about user’s acceptance of information systems. This section introduces the Innovation Diffusion Theory (IDT) model, the Technology Acceptance Model (TAM), and the Model of PC Utilization (MPCU). These three models are milestones in information system adoption in different research development stages.

**Innovation Diffusion Theory (IDT) Model**

Rooted in multiple disciplines such as anthropology, early sociology, rural sociology, education, industrial sociology, and medical sociology, the Innovation Diffusion Theory (IDT) model (Rogers, 2003) has been applied since the 1960s to study diffusions of various kinds of innovations from agricultural tools to information technologies. There are four key elements in the IDT model, namely: innovation, communication channels, time, and social system (Rogers, 2003). Rogers defines innovation as “an idea, practice, or object that is perceived new by an individual or other units of adoption” (Rogers, 2003, p. 12). The communication channel is the way through which information about innovation is diffused to people. The communication channel
bridges the gap between experienced users of innovation and potential adopters of that innovation (Rogers, 2003, p. 18). Time, as the third element in the diffusion process, measures the adoption rate during a period of time. Based on the time of adoption, Rogers has categorized adopters at different stage of diffusion process into: (1) innovators, (2) early adopters, (3) late majority, and (4) laggard (Rogers, 2003, p. 22), which is shown in Figure 2.

![Figure 2. The Rate of Adoption. Adapted from Rogers (2003).](image)

Innovators adopt innovation immediately because they have a higher degree of media exposure and a broader interpersonal network than other people; they are also more willing to take risks than others (Rogers, 2003, p. 282). Early adopters appear soon
in the second stage of innovation distribution. Then come the late majority who represent most of the population in a social system. Finally, laggard adopters, who are usually isolated from the social network system, accept that innovation (Rogers, 2003, p. 284-285). The fourth element of diffusion, social system, is a system consisting of a pattern arrangement of units (Rogers, 2003, p. 23).

Innovation diffusion happens when an innovation is distributed to a social system through a communication channel during a period rate of time. Commonly, five major attributes of innovations determine their rate of adoption by people. The first is the relative advantage, which is defined as “the degree to which an innovation is perceived as better than the idea it supersedes” (Rogers, 2003, p. 265). This advantage is measured in terms that matter to users and is totally dependent on the needs of the user group. The second attribute is compatibility, which refers to how an innovation is consistent with users’ former experiences, existing values, and needs (Rogers, 2005, p. 266). The third attribute is complexity, referring to how difficult it is for users to use the innovation. The fourth attribute is trialability, which means the extent to which users are given the chance to gain experience of the innovation. The fifth attribute is observability, which means the extent to which the results can be seen. The more the relative advantage of an innovation is perceived by users, the more likely that these users will adopt the innovation (Chatterjee, 2012). Similarly, the more compatible an innovation is with the users’ past experience, existing values, and needs, the more likely users will accept that innovation. As for the complexity, the easier users can manipulate the innovation, the
more likely users are willing to accept the innovation. As to trialability and observability, both have a positive relation with users’ adoption of innovation.

Rogers’s IDT model has been applied by many researchers to explain the phenomenon of technology adoption in higher education (Medlin, 2001). It is beneficial for university administrators and faculty members to understand the process of students’ adoption of innovations through a lens of intrinsic and extrinsic variables. Furthermore, the IDT model has formulated a well-researched conceptual framework for subsequent technology adoption theories, highlighting the value of employing theoretical constructs to conduct assessment research.

However, the IDT model is still far from perfection. One limitation is pro-innovation bias, which assumes that all the innovations distributed are beneficial to adopters equally. Under this assumption, it is always the right choice to adopt innovation whether or not the innovation itself is beneficial to users. Another limitation of the IDT model is that it assumes technology is static and that technology does not change along with the increase of adopters. In reality, however, innovation will continually take place based on former innovations in order to attract new adopters, making the s-curve appear as a bell curve (as shown in Figure 3), which reflects adopters adopting different versions of the same innovation.
Figure 3. Adopter Categorization on the Basis of Innovativeness. Adapted from Rogers (2003).

Technology Acceptance Model

The TAM model, originally proposed by Davis (1986), explains users’ acceptance of information systems from the standpoint of the external factors’ influencing the users’ acceptance of a technology. Davis (1986) suggested that this model simulates the situation where users become adopters of a certain newly-introduced technology. The TAM model assumes that external factors will exert influence on internal factors, perceived usefulness (PU), and perceived ease-of-use (PEOU), which will affect the user’s attitude (A) towards using that technology. The attitude toward using technology will impact the user’s behavioral intention (BI) to use or not to use the new technology. Finally behavioral intention (BI) will determine
whether or not users actually use the system (Davis, 1986). The illustration of these relationships in the TAM model is shown in Figure 4 below.

Figure 4. Technology Acceptance Model. Adapted from Davis, Bagozzi, & Warshaw, (1989).

Perceived Usefulness (PU) is defined as the extent to which a user considers that the usage of the newly introduced technology would benefit his or her work performance (Davis, 1986). The more the user regards the technology as a beneficial tool for his or her work performance, the more likely the user will hold a good attitude towards the technology, and because of this attitude (A) there is a greater chance for the user to adopt the technology. The other important internal factor—Perceived Ease of Use (PEOU)—is referred to as the degree to which a user considers the technology to be difficult to use (Davis, 1986). The more difficult the user thinks the technology is to use, the less likely the user will have a good attitude towards this technology, and because of this attitude (A) there is a lesser chance the user adopting it. The user’s attitude towards the technology (A) is classified from positive to negative, which has a positive or negative
influence respectively on the user’s behavioral intention (BI) to use. Behavioral intention has an immediate effect on the user’s actual usage of the technology.

Thanks to its simplicity and ease of understanding, the TAM model has been widely applied to explain technology acceptance behavior in the field of higher education (Baker-Eveleth, Eveleth, O’Neill, & Stone, 2006; Gibson, Harris, & Colaric, 2008; Huang, Lin, & Chuang, 2007; Min, Yan, & Yuecheng, 2004; Walker, & Johnson, 2008). The majority of the research focuses on predicting and determining the factors influencing the acceptance of e-learning by users, especially by students and faculty involved in e-learning classes. Moreover, the TAM model possesses explanation power of 40 percent to 50 percent, making it stand out among other Information System acceptance models, such as the Theory of Reasoned Action (TRA) and the Motivational Model (MM) (Venkatesh & Davis, 2000).

However, the TAM model fails to include social influence as an external variable in the process of users’ acceptance of a technology (Malhotra & Galleta, 1999). It is only conceived at the individual level and lacks application in multiple personal circumstances. Ignoring the influence of social ties on the users’ adoption of technology has reduced the explanatory power of the TAM model so that the TAM model is continuously extended to other technology acceptance models, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) model and the TAM 2 Model (Venkatesh, & Davis, 2000).
Model of Personal Computer Utilization

The model of Personal Computer Utilization (MPCU) (Thompson, Higgins, & Howell, 1991) is a personal computer acceptance theory derived from a theory of human behavior (Triandis, 1977). There are six factors impacting the user’s utilization of personal computers, which are job-fit, complexity, long-term consequences, affect towards use, social factors, and facilitating conditions (Thompson et al., 1991). The job-fit construct is a factor from the perspective of job performance, to which a user considers the personal computer to handle his or her work efficiency and enhance his or her job performance. Complexity, similar to the concept of ease-of-use in the TAM model, refers to the user’s perception of the degree of difficulty in using personal computers. Long-term consequences refer to a possible future pay-off from the current usage of personal computers. Affect towards use is similar to the notion of attitude towards use in the TAM model; it is defined as a series of feelings that a user may have during their use of personal computers. Social factors are the effects brought from subject norms of a society where a potential user lives. Messages passed by others can influence potential users about whether or not he or she should use personal computers. The compatibility of personal computers with a potential adopter’s social norm is significant to the potential user’s acceptance of personal computers (Tornatzky & Klein, 1982). Facilitating conditions is an external factor influencing a potential adopter’s acceptance of personal computers. It refers to external conditions that are deliberately created to support potential user’s adoption of personal computers. Facilitating conditions encompasses a positive relationship with adoption behavior. Examples of
facilitating conditions include a study workshop, or a specific person available for assistance with software or hardware problems (Thompson et al., 1991).

There are six factors in the MPCU Model affecting utilization of personal computers (as shown in Figure 5). Few correlations amongst them were found in the study by Thompson et al. (1991). One finding that stood out was that social factors have a positive impact on the utilization of personal computers (Thompson et al., 1991). Also, the result showed that the job-fit factor maintained a positive relationship with the utilization of personal computers. The more compatible the functions of the personal computer are with a potential user’s working needs, the more possible that this potential user will utilize personal computers to complete his or her work.

However, not all the factors raised in MPCU have been validated. It is uncertain what the relationship is between affect towards PC use and utilization of PCs as well as the relationship between facilitating conditions for PC use and utilization of PCs because of non-significant results in the statistics (Thompson et al., 1991). Nevertheless, validation for the influences of social factors and job-fit on the utilization of personal computers paves the way for the UTAUT model to construct a comparably complete model with higher explanation power.
Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) is an acceptance and adoption model created by Venkatesh et al. in 2003. Coming from the field of business and management at four universities (University of Maryland, University of Virginia, University of Minnesota, and University of Arkansas), these researchers created a model that studies average people’s adoption decision and
innovation behaviors. For example, this model can be used to analyze the adult learner’s adoption behavior of a new e-learning app; it is also suitable for use in corporate environments if one wants to know the degree of employees’ motivation when adopting new software (Yoo, Han, & Huang, 2012).

In the following paragraphs, Venkatesh’s original study and the Unified Theory of Acceptance and Use of Technology (UTAUT) model constructs as well as mediating factors are introduced. The application of the UTAUT model to investigate the acceptance of e-learning in workplace and academic environments is also discussed. Furthermore, the strengths and limitations of the UTAUT model are covered as well.

**UTAUT Model Constructs**

The UTAUT model combines eight different models (Venkatesh et al., 2003), which are: the theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behavior, a model combining the technology acceptance model and the theory of planned behavior, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory. Venkatesh and his associates created UTAUT based on their identification of certain factors they considered to be significant in effecting a person’s decision on whether or not to adopt a particular new technology (Liu, 2012).

Similar to behavior intention to use (BI) in the TAM model, “behavioral intention” refers to a user starting to form an intention to use the technology. On the other hand, “use behavior” refers to a user acting on using the technology (Venkatesh et al., 2003). Within the heated debate about factors that have influenced adoption,
Venkatesh et al. (2003), from previous models (e.g., TAM, TAM2 and Model of PC Utilization), identified seven constructs that indirectly influenced use behavior by impacting behavioral intention. These were collapsed into four final constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy, effort expectancy, and social influence are direct determinants of behavioral intention, while facilitating conditions is a direct determinant of user behavior. Figure 6 displays the relationships between constructs and behavior intention and use behavior. Four mediating factors, meaning factors that result from extrinsic and objective conditions, impact these four constructs. These conditions are gender, age, experience and voluntariness of use.

Figure 6. Research Model. Adapted from Venkatesh et al. (2003).
Performance Expectancy

Performance expectancy refers to the adopter’s estimate for the potential job benefit that the use of technology may bring. This kind of estimate is composed of the perceived usefulness of the technology, extrinsic motivation to use the technology, usefulness of the technology to job-fit, relative advantages of the technology over other technologies, and outcome expectancy. To be more specific about these five constructs included in performance expectancy, the construct of perceived usefulness of the technology measures the extent to which a person considering using a particular technology will improve his or her job performance; extrinsic motivation pays attention to the outer drive, such as improved job performance, pay or promotions, to use a particular technology; for job-fit, it stresses the functional aspect of technology in upgrading an individual’s job performance; the construct of relative advantage deals with the benefit the new technology may bring compared with what has already been achieved by former systems; the construct of outcome expectancy focuses on the consequence of behavior which can be split into job-related performance expectations and personal expectations that relate to individual goals. In application, items used in estimating performance expectancy include “I would find the system useful in my job,” “Using the system increases my productivity” as well as “If I use this system, I will increase my chance of getting a raise,” and so on (Venkatesh et al., 2003).

Effort Expectancy

Effort expectancy is similar to the notion of perceived usefulness of technology described in the TAM model. It consists of three constructs: perceived ease of use,
complexity, and ease of use, which derive from previous studies. The construct of perceived ease of use aims at testing the extent to which a user considers it spare effort to use a particular technology; the construct complexity defines a situation in which people think of the new system as a comparably more complex tool to understand and use; the construct of ease of use is the degree to which using an innovation is perceived as being difficult. The effort expectancy construct plays a significant role in both voluntary and mandatory usage contexts, but it is never as important in the second time of use because the users who utilize the technology for a second time or more are familiar with the manipulation process already. In practice, items used to estimate effort expectancy include “My interaction with the system would be clear and understandable,” “It would be easy for me to become skillful at using the system,” and “I would find the system easy for me” (Venkatesh et al., 2003).

Social Influence

The social influence construct describes a situation in which an individual considers adopting a particular technology because of other people’s suggestions. It is a compound of the subjective norm construct, the social factor construct, and the image construct. The subjective norm construct refers to a situation in which a person’s decision about whether to adopt an innovation depends on other people whose ideas deemed to be important to him or her. The social factor construct describes a situation in which an individual makes the decision to adopt a technology under the influence of the whole social situation. The image construct focuses on testing the degree to which the use of an innovation is perceived to enhance one’s image or status in one’s social system.
These three constructs can also be identified as “compliance,” “internalization,” and “identification” (Venkatesh & Davis, 2000; Warshaw, 1980). Usually, to measure the effect of social influence, researchers utilize items like “People who influence my behavior think that I should use the system,” “People who are important to me think that I should use the system,” “In general, the organization has supported the use of the system” (Venkatesh et al., 2003).

Facilitating Conditions

Facilitating conditions discuss the role that organizational and technical infrastructures play in the innovation adoption decision of an individual. It is made up of three different constructs: perceived behavioral control, facilitating conditions, and compatibility. Perceived behavioral control includes an individual’s self-efficacy, resource facilitating conditions, and technology facilitating conditions. Facilitating conditions give more detailed information about the surrounding environment, including both technical aspects and rule aspects, which may enhance or retard innovation acceptance for individuals. The compatibility construct mainly refers to the compatibility of the innovation with already existing values, needs, and experiences of potential adopters. Items that measure the facilitating conditions’ effect are usually “I have the resources necessary to use the system,” “The system is not compatible with other systems I use,” “A specific person (or group) is available for assistance with system difficulties” (Venkatesh et al., 2003).
Mediating Factors

Besides the four main constructs, there are another four moderators: gender, age, experience, and voluntariness of experience. Although they are not determinant factors compared with performance expectancy, effort expectancy, social influence, and facilitating condition, they can execute an effect on using behavior by impacting those four determinant constructs.

Gender

Gender can moderate performance expectancy, effort expectancy, and social influence. As research indicates, men tend to have higher performance expectancy than women because they are inclined to be task-oriented, and task achievement is important to them (Minton & Schneider, 1980). This instinct derives from gender roles and socialization. Also, previous studies have suggested that effort expectancy is more significant to women than to men (Bem & Allen, 1974; Bozionelos, 1996). Gender roles contribute to this difference between men and women (Lynott & McCandless, 2000; Motowidlo, 1982; Wong, Kettlewell & Sproule, 1985). As for social influence, women tend to be more sensitive to others’ opinions than men do so that social influence is more salient in adopting technology to women than to men (Miller, 1976; Venkatesh et al., 2003).

Age

Age, as another important mediator factor, can impact all the main constructs. For performance expectancy, younger people tend to be more attracted by extrinsic rewards than older people. Effort expectancy is a more salient factor in adopting an
innovation among older people than younger people (Morris & Venkatesh, 2000). Also, older people are more likely to place increased salience on social influence, with the effect declining with experience (Morris & Venkatesh, 2000). Furthermore, with regards to facilitating condition, older people are more subjective to environmental setup because their way of learning is more passive and based on experience.

Experience

Experience can make a difference on an adopter’s effort expectancy, social influence, and facilitating conditions. It refers to the degree of manipulation proficiency of a technology a user gains over a period of time. For people who have little experience with a new system, effort expectancy is a more salient factor in predicting behavioral intention. On the contrary, if the experience is in a later stage, effort expectancy will not exert much effect on behavioral intention. Also, social influence plays a significant role in enhancing behavioral intention during the early stages of experience, while its effect will fade as people’s experience about the new technology evolves into a later stage (Agarwal & Prasad, 1997; Taylor & Todd, 1995a). The facilitating condition becomes a more important factor compared to behavioral intention as experience with the new systems increases, so that impediments toward sustainable usage can be removed (Bergeron, Rivard, & De Serre, 1990).

Voluntariness of Use

Voluntariness of use can only mediate the social influence’s effect on behavioral intention. Social influence can exert its influence to fullness under a mandatory context.
because it has a direct effect on intention, while more effort is spent to impact behavioral intention under voluntary context (Venkatesh & Davis, 2000).

**Application of UTAUT to Investigate the Acceptance of E-Learning**

There is much research using UTAUT theory to study the innovation acceptance process of adopters. From the perspective of testing the target, this research involves innovations from commercial products to educational technologies. From the aspect of testing the context, this research focus varies from large organizations, such as international corporations, to small businesses, and to educational institutions. From the standpoint of cultural difference, some research tests UTAUT theory in different countries, from Asia to Europe.

Research relevant to the education area mainly focuses on e-learning, which is a very popular way of studying among young people nowadays. There is plenty of research examining the reasons why people adopt or reject e-learning (Cheung & Vogel, 2013; Jan & Contreras, 2011; Lauridsen, 2011).

**The Acceptance of e-learning in Workplaces**

A study on the acceptance of e-learning in a workplace in South Korea was conducted using UTAUT theory (Yoo, Han, & Huang, 2012). This research targeted the exploration on the intrinsic and extrinsic motivation behind the acceptance of e-learning by young employees. The researchers selected a mid-size food service company in South Korea as a sample site and used a survey composed of 7-point Likert Scale questions covering the categories of performance expectancy, effort expectancy, attitude, social
influence, facilitating condition, anxiety, and the intention to use e-learning. Among those items, performance expectancy, social influence, and facilitating conditions were classified as extrinsic motivation, while effort expectancy, anxiety and attitude towards using e-learning were regarded as intrinsic motivation. As the results showed, intrinsic factors such as effort expectancy and attitudes towards e-learning had a major positive effect on behavioral intention of use while anxiety had a tremendous negative effect on behavioral intention of use. On the other hand, extrinsic factors such as facilitating conditions did little with behavioral intention to use e-learning. The conclusion of this study was that extrinsic motivation on e-learning in the workplace did not immediately or independently influence the intention to use e-learning among employees.

The Acceptance of e-learning in Higher Education

Another study using UTAUT theory to explain web-based learning, or e-learning, adoption behavior, was conducted by two Taiwanese researchers (Chin & Wang, 2008). However, this research focused on the learner’s continuance of using web-based learning under the context of an educational organization, which provided online courses for both full-time and part-time students, quite different from the research introduced above in South Korea. This research adapted UTAUT theory to its theme-technology adoption continuance. It set up 14 pairs of relationships in total: performance expectancy and continuance intention, effort expectancy and performance expectancy, effort expectancy and continuance intention, computer self-efficacy and effort expectancy, computer self-efficacy and continuance intention, social influence and continuance intention, facilitating condition and continuance intention, attainment value and continuance
intention, utility value and continuance intention, intrinsic value (playfulness) and continuance intention, social isolation and continuance intention, anxiety and continuance intention, delay in response and continuance intention, and risk of arbitrary learning and continuance intention. As the result indicated, performance expectancy and utility value had almost the same effect on continuance intention for part-time students who had limited time for study; social influence and facilitating conditions, social isolation and delay in response had little effect on the user’s intention to continue use web-based learning; the total influence of performance expectancy, effort expectancy, computer self-efficacy, social influence and facilitating conditions was only 46.6 percent on continuance intention. The implication here was that intrinsic value, such as effort expectancy and positive subjective task value, could drive learners to keep taking web-based courses.

The Use of Educational Portals in Developing Countries

In the study of Maldonado, Khan, Moon and Rho (2010), the acceptance of an educational portal in developing countries was put under a closer observation. The researchers tried to explore the effects that e-learning motivation, social influence, and facilitating condition had on Peruvian students’ use of the Peru EDUCA e-learning portal (Ministry of Education Peru, 2007b; BFPE, 2008). The researchers adjusted the UTAUT model by substituting the constructs of performance expectancy and effort expectancy with e-learning motivation, which was defined as “a student’s tendency to find an e-learning system useful, easy to use, and try to derive the intended academic benefits from it” (Maldonado et al., 2010, p. 70). E-learning motivation, the authors
claimed, “is composed of items adopted from the motivation, performance, and effort expectancy constructs...” Furthermore, in considering the social and economic situation in Peru, Maldonado et al. (2010) listed region and gender as moderators instead of the original ones in Venkatesh’s study because regional culture and gender role may exert bigger influences on students in Peru (Eamon, 2004). After data analysis, the researchers came to the conclusion that e-learning motivation and social influence both had a significant and positive influence on behavior intention, and behavior intention had a positive influence on use behavior, which in turn positively affects e-learning motivation; while region had a negative interacting effect with the social influence, which had effect on intention behavior, facilitating condition had no obvious influence on intention behavior (Maldonado et al., 2010).

**Strengths and Limitations of UTAUT Model**

As a product generated from experience of previous technology adoption theories, the UTAUT model is comparably complete model.

First, its explanatory power in technology using behavior is up to 70 percent, a much higher rate than other technology acceptance theories (Wu, Tao, & Yang, 2008, p. 928). With such an accuracy and broad application in explaining technology adoption behavior, the Unified Theory of Acceptance and Technology (UTAUT) model surpassed other theories and became a better choice for researchers in the area of technology use behavior.
Secondly, its usage is not limited to a single industry but can be extended to industries such as mobile commerce (Xiao, 2006), online learning (Zeng, 2005) as well as medical surgery equipment (BenMessaoud, Kharrzi & MacDorman, 2011), and clinical support system (Jeng & Tzeng, 2012).

The limitation of the UTAUT model is its inflexibility to adapt to different contexts. As Gahtani, Hubona, and Wang (2007) reported in their research about information technology acceptance in Saudi Arabia, cultural difference of Saudi Arabia from those of a typical western country became an obstacle to using the Unified Theory of Acceptance and Use of Technology to analyze workers’ adoption of computers in Saudi Arabia. Workers in Saudi Arabia had different work-related values from those of workers in western countries thanks to Arab cultural beliefs that formed a resistance to IT technology, and this difference negatively interacted with social influence and hence exerted negative influence on workers’ acceptance of IT technology.

Also in the research on student’s acceptance of educational portal in Peru, Maldonado, Khan, Moon and Jeung(2010) had to do some adjustment on moderators such as experience, voluntariness, and age to reflect region. According to Trichenor’s theory (Trichenor, Donohue, & Olien, 1970), the higher the social-economic status the faster and easier people can acquire political and scientific knowledge including technology. In Peru, the different levels of social-economic status can be classified based on three regions.
Summary

Previous research on users’ acceptance of LMSs through the lens of the Unified Theory of Acceptance and Use of Technology (UTAUT) model has been discussed. For example, Yoo, Han, and Huang (2012) found that employers in South Korea were influenced positively by factors as effort expectancy and attitudes toward e-learning in the workplace; Chin and Wang (2008) identified performance expectancy, effort expectancy, and positive subjective task value, as drivers to college students success when taking web-based courses; Maldonado, Khan, Moon, and Rho (2010) revealed that e-learning motivation and social influence had an effect on the learners’ acceptance of e-learning.

Despite of the abundance of previous studies on factors influencing the learners’ acceptance of e-learning, little attention has been paid specifically to factors impacting the ESL students’ acceptance of open source LMSs and Moodle in particular.

To fill this gap, this study proposes to investigate factors that impact ESL students’ interaction with Moodle using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The following research questions guided this research study:

1. Does ESL learners’ “performance expectancy” influence their adoption of Moodle in the English classroom?
2. Does ESL learners’ “effort expectancy” influence their adoption of Moodle in the English classroom?
3. What impact can “facilitating conditions” have on ESL learners’ adoption of
Moodle in the English classroom?

4. What is the effect of “social influence” on ESL learners’ adoption of Moodle in the English classroom?

5. What other factors, if any, drive ESL learners’ adoption of Moodle in the English classroom?
CHAPTER 3 METHODOLOGY

Research Approach

A qualitative approach was used for this research. In contrast to quantitative research, qualitative research is a data-gathering technique that emphasizes observations and interviews rather than raw data (Travers, 2001). The strength of qualitative research lies in its ability to explore a topic in depth (Marchall & Rossman, 1995). It can be used to discover people’s thoughts and opinions. Qualitative research has five major methods for data collection: observation, interviewing, ethnographic fieldwork, discourse analysis, and textual analysis (Travers, 2001). The sample size is relatively small. Nevertheless, qualitative research can be conducted through intense contact with the representative population. It could also diversify details of people’s feelings and also their logic for doing something (Huberman & Miles, 1994). In order to search for certain possible factors exerting influence on ESL students’ adoption behavior of an open source (OS) learning management system (LMS) in their English classes, the framework of this qualitative research was designed based on a complete technology acceptance theory. Meanwhile, for the purpose of getting an in-depth understanding of how these influential factors work on the learners, semi-constructed interview questions were formed to leave learners more thinking spaces of their own.

Although the results and further implications are only at a case-study level, an in-depth understanding of ESL learners’ own thoughts about what has influenced their acceptance of an open source LMS was obtained through this method. The research does
not intend only to display whether the factors enlisted in the UTAUT model account for ESL learners’ adoption behavior, but also to show more details of users’ feelings underlying each factor that may exert effect on their behavior.

Participants

There were thirteen students who voluntarily participated in this study. They were from two classes, an ESL grammar class at a low intermediate level—the second level of a five level curriculum starting with low to proficient—and an ESL reading class at low intermediate level, at a large research Midwestern US university. The participants consisted of seven ESL students from the ESL grammar class and six ESL students in the ESL reading class. These two classes are designed for international students who have reached the minimum English proficiency requirement but still lack sufficient English language capacity to deal with their upcoming academic study. Both of the classes employed Moodle as a computer-assisted tool for lectures.

Demographic Data

The participants in this study were international students from the ESL grammar class and the reading class. The majority of these international students were from China and first-year students. Only two participants were from countries other than China; one was from Saudi Arabia and another was from South Korea. Their English proficiency was at low intermediate level by the time they took part in this study as judged by English placement test. The participants were fairly homogeneous in age (ranging from 19 to 40, M = 22.17, SD = 6.10), native languages (most were Chinese, with one Arabic-speaking student and one Korean-speaking student), academic status (most were
freshman), academic major (the majority were undecided), and experience of using LMS before attending ESL grammar and reading classes (nearly half of them had used Moodle before these two classes). The majority of the participants had stayed in this ESL program for at least six months (about one semester). There were only three females in this study, and all were Chinese.

The participants were randomly assigned to four different focus groups. Each group had at least one student from the grammar class and one student from the reading class in order to obtain balanced opinions from both sets of students. Table 4.1, Table 4.2, Table 4.3 and Table 4.4 show the demographic information collected from these students.

Table 4.1 Group 1 Students’ Profiles

<table>
<thead>
<tr>
<th>Student</th>
<th>Age</th>
<th>Gender</th>
<th>Major</th>
<th>Status</th>
<th>NL</th>
<th>Class</th>
<th>LMS Used Before ESL Program</th>
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<td>Other</td>
<td>Chinese</td>
<td>Reading</td>
<td>BB &amp; Ed</td>
</tr>
<tr>
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<td>19</td>
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<td>None</td>
<td>FRSH</td>
<td>Chinese</td>
<td>Grammar</td>
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</table>

Note: NL=Native Language, ARC=Architecture, FRSH=Freshman, BB=Blackboard, Ed=Edmodo, LMS=Learning Management System
Table 4.2 Group 2 Students’ Profiles

<table>
<thead>
<tr>
<th>Student</th>
<th>Age</th>
<th>Gender</th>
<th>Major</th>
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<th>NL</th>
<th>Class</th>
<th>LMS Used Before ESL Program</th>
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<td>None</td>
<td>FRSH</td>
<td>Chinese</td>
<td>Grammar</td>
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</tr>
</tbody>
</table>

Note: NL=Native Language, FRSH=Freshman, LMS=Learning Management System, Blackboard=BB

Table 4.3 Group 3 Students’ Profiles

<table>
<thead>
<tr>
<th>Student</th>
<th>Age</th>
<th>Gender</th>
<th>Major</th>
<th>Status</th>
<th>NL</th>
<th>Class</th>
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<td>Grammar</td>
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</table>

Note: NL=Native Language, ENGR=Engineer, AM=Apparel Merchandise, LMS=Learning Management System, CS=Computer Science, GRAD=Graduate Student, Moo=Moodle, BB=Blackboard
Table 4.4 Group 4 Students’ Profiles

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<td>Grammar</td>
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</tr>
</tbody>
</table>

*Note: NL=Native Language, HM=Hospitality Management, Moo=Moodle, BB=Blackboard, LMS=Learning Management System*

Most of the participants in these four focus groups indicated their willingness to use Moodle; however, two students indicated that they would not have chosen to use Moodle if not required by English department because they thought Moodle was not visually attractive.

Methods of Data Collection

The method of data collection for this study was focus group discussion. By definition, a focus group is a group of people in an interactive setting, being asked about their attitudes toward a product, service, concept, advertisement, idea, or packaging. Generally speaking, there are eight to twelve participants in each group and every group-interviewing interval does not exceed three hours (Stewart & Shamdasani, 1990). The focus group method can facilitate an in-depth exploration of an idea or a topic as well as a phenomenon that participants usually observe in their daily lives. It is also suitable for formulating research hypotheses because it has leaves a large space for participants to
freely express their own thoughts from their specific perspective. In addition, the focus group method can be used as a follow-up after a quantitative survey, validating whether the hypotheses are right or wrong (Stewart & Shamdasani, 1990).

According to Krippendorf (1980), research result data is classified into mainly two types: one type of data that is generated from natural and indigenous forms, another from the application of a systematic research framework. The data generated through a focus group technique is classified somewhere in between those data types as mentioned above. It is the result of ESL learner participants’ description of their own experience with Moodle; at the same time, it is also coming from the researcher’s pre-designed questions, which led the whole conversation. In this way, the data attained in this study is rich and full of content.

In this study, four focus group interviews were held. As described in the previous charts, the interviewees of group 1 were composed of two students from the ESL grammar class and one student from the reading class. Another two students from the ESL grammar class plus one student from the reading class participated in the discussion of group 2. Group 3 involved two students from the ESL reading class with two students from grammar class as well. Group 4 was made up of one student from the ESL grammar class and two students from the ESL reading class. By mixing students from both the English reading class and the English grammar class in the same group, each discussion could get diverse answers to the same question (see Table 4.1, Table 4.2, Table 4.3 and Table 4.4 for more information about the participants).
Within the focus groups, an observation of participants’ interactions was also conducted. Observation is a qualitative research method focusing on behaviors in a chosen setting (Marchall & Rossman, 1995). Observations were conducted during the focus group discussions, not while participants were using Moodle in class. The purpose of these observations was not to address directly the research questions. Observations served to examine the validation of participants’ answers and reduce the limitation of participants’ verbal descriptions. The purpose was to use observations to capture a complete picture of participants’ feelings. Observation notes also worked as supplemental materials on participants’ characteristics. By observing participants’ reactions and body language as well as expressions, some subtle feelings and attitudes of participants were discerned. The data collected using observations reduced the limitation of participants’ verbal descriptions and revealed a more complete picture of participants’ feelings.

**Instrumentation**

An eight-item questionnaire was used to collect demographic information, such as the age, gender, major, and native language of participants before discussions began. A thirteen-item interview guide was designed to lead and stimulate conversation and discussion during the whole process of focus group discussions.

Questions in the interview guide were created based on the UTAUT model (see Appendix A, Appendix B, Appendix C, & Appendix D). The infrastructure of this questionnaire was mainly built around the four constructs of the UTAUT model (Venkatesh et al., 2003), namely performance expectancy, effort expectancy, social
influence, and facilitating conditions. In addition, there were several interview questions set up to explore the focus group participants’ own ideas, letting them say what they thought had influenced their acceptance of Moodle in their English class.

The questions were divided into four sections, corresponding to the four constructs in the UTAUT model, and another two sections related to participants’ specific reasons for adopting Moodle in their English classes. The questions in the first section were from the construct of performance expectancy (PE) in the UTAUT model. The content focused on the effect of the participants’ study performance expectancy and participants’ beliefs about Moodle’s effectiveness in improving study performance on their adoption of Moodle. Questions from the second section were based on construct of effort expectancy (EE). The topic here concerned the influence that students’ perceptions of whether the manipulation of Moodle was easy or hard brought to their acceptance of Moodle. Section three was dominated by questions about the facilitating condition (FC). These questions were concerned with the supportive resources available for students to conquer problems incurred from Moodle and the impact of these supportive resources on their adoption decision. In the fourth section, questions were set up surrounding social influence (SE). This major discussion addressed the theme related to how people who are around and important to participants exert an effect on participants’ acceptance of Moodle.

How Data were Collected

The data were collected within a three-week period in February 2013. Four focus group interviews took place on different days, and each lasted about thirty-five minutes.
The interviews were carried out in a restaurant near school during lunchtime when the students were free from classes. All of the participants were volunteers from either the ESL grammar class or the ESL reading class, and some knew each other before this interview. The students and researcher sat at the same table talking while having lunch. Because students in group 1 and group 2 were all Chinese students, the discussions for group 1 and group 2 were conducted in Chinese, and group 3 and group 4 in English. The conversations were not audio-recorded after some of the students said they were uncomfortable being audio-recorded. Instead, the conversations were all scripted by hand based on notes that the researcher had taken during the interviews. The interview guide was the questionnaire as mentioned above in the section on instrumentation. The interviews usually began with a general question, such as *How has been your experience on using Moodle in the ESL grammar or reading class?* This was followed by a question asking whether students liked to use Moodle in their ESL classes. Despite being guided with a structured questionnaire, the conversations were subject to adjustment if any of the participants talked about something new and connected with possible factors that may have influenced their own adoption of Moodle in their ESL grammar or reading class. In these types of situations, the researcher encouraged participants to say more about their own reasons and feelings. At the end of interviews, the researcher always let participants compare Moodle with other commercial LMSs that they had used before, such as BlackBoard or Edmodo.
Data Analysis

For the data analysis, an iterative and deductive process of analysis was used. Because audio recordings were not allowed by the focus group participants, the researcher took detailed handwritten notes during the focus groups. Since the discussion process went fairly fast, the conversations among the participants were not written down verbatim. Instead, the interview notes captured the conversations as a series of paraphrases. The interview notes recorded during the focus group discussions were translated into English for focus groups 1 and 2 after the group discussions because they were conducted in Chinese initially. After that, the interview notes were compiled and prepared for analysis.

The data analysis was conducted across the four focus discussion groups so that the findings could be compared among groups. The template analytical approach (Crabtree & Miller, 1999) and the data-driven inductive approach (Boyatzis, 1998) were used in the data analysis process.

The template analytical approach is a deductive way of coding that requires a preliminary framework sustaining the research. This approach requires a conceptual template, which is built on a system of knowledge or theory in order to organize categories and subcategories identified from the raw data. In this study, the data analysis was based upon the theoretical framework—the UTAUT model—which also guided the research questions. Based on the detailed handwritten notes (interview notes) taken during the focus group discussions and subsequent data analysis, four categories were
identified—performance expectancy, effort expectancy, social influence, and facilitating conditions—corresponding to the four constructs of the UTAUT model.

The data-driven inductive approach (Boyatzis, 1998) explains how to create categories as a result of interpreting raw data. A good category should capture the qualitative richness of a phenomenon (Boyatzis, 1998). Boyatzis defines a category as a particular pattern that can grasp the core meaning of the phenomenon under study. This approach involves an inductive process, which consists of a systematic procedure of identifying categories emerging from the frequent, dominant, or significant items inherent in raw data (Boyatzis, 1998). In this research, a category—former practice—was identified through this inductive process. This new construct emerged from the participants’ responses when asked questions about what other factors had an effect on their use of Moodle besides influence of performance expectancy, effort expectancy, social influence, and facilitating conditions. These participants responded that their previous successful use of Moodle or similar LMSs impacted their quick adoption of Moodle in the English courses.

The data-driven inductive approach (Boyatzis, 1998) was also used to identify subcategories. Established as a result of the analysis of the interviewing notes, subcategories were refined and were matched to the corresponding categories. For instance, the part of the focus group where students shared their experiences with Moodle features such as online quizzes and assignment submission was organized under a subcategory named study efficiency. Since this part stressed the participants’ attribution of their acceptance of Moodle to functions that improved their study
performance, such as saved study time and whether it helped them complete course activities quicker, it was considered to be related with performance expectancy. Therefore the subcategory, study efficiency, was created under the category performance expectancy.

Summary

The qualitative research approach offered an in-depth understanding of ESL learners’ own thoughts about what has influenced their acceptance of Moodle. The participants in this study tended to be homogeneous in age, native languages, academic status, academic major, and experience of using LMSs. The majority of the participants had stayed in this ESL program for at least six months. There were only three females in this study and all were Chinese. As far as the methods of data collection, focus group discussion facilitated an in-depth exploration of the topic; and observations served to validate of participants’ input.

Data analysis employed both template analytical (Crabtree & Miller, 1999) and data-driven inductive approaches (Boyatzis, 1998) and was conducted across the four focus groups. As a result, categories and subcategories were established.
CHAPTER 4 FINDINGS

In the following paragraphs, findings about the factors exerting effect on ESL students’ adoption of Moodle in their English classes are presented. The first part concentrates on the observation of the interactions. The second part focuses on describing what was observed during these four focus group discussions. The third part of this chapter results from the analysis of the focus group interview notes.

Observation of the Interactions

The focus group interviews were all held during lunchtime, so the atmosphere was relaxed and comfortable, just as “talks” between friends who had lunch together and shared some class experiences. Each group discussion started with a brief self-introduction of the researcher, followed by self-introductions of participants. After this warm-up stage, participants shared their opinions about Moodle openly. The observation of participants’ interactions during the focus group did not necessarily address the research questions; however they are useful to validate the participants’ answers and reduce participants’ verbal limitations, and at the same time reveal a more complete picture of participants’ perspectives and feelings.

Balance of Dominance and Withdrawal Participants

In each group, there was one student who reacted more actively and dominated the majority of the discussion. Usually, the active students were the ones who were the first to introduce themselves and the first to share their perspectives while the other two or three students tended to be withdrawn and only answered questions they were asked
without further comments. To change this situation, the researcher tried to give more attention to the students who were less talkative in the group to avoid missing their opinions. For the students who tended to dominate the conversation, the researcher paid less attention and tried not to reinforce their input during the discussion. This tactic worked and at the end of each group discussion, the researcher got evenly distributed talk from every participant.

**Flow of Discussions**

The flow of discussions did not always go as expected. Sometimes, students misunderstood the questions (this situation occurred more frequently in focus group 3 and focus group 4). Usually, the researcher did not realize this problem until the student finished answering. At that moment, the researcher had to rephrase the question to the student, impeding the process of further talk. In other cases, some students were inclined to pay attention to a specific question they felt interested in for a comparably longer time, which postponed the end of discussion. In situations like this, the researcher intervened by summarizing this question and moving onto the next question.

**Conformity of Responses**

The conformity of the sample selection led to the conformity of responses by the participants. Because most of the participants were male international students from China, who just started their first year of study at the university, the similarities in participants’ characteristics resulted in the similarities of answers they gave. The conformity in the answers of the respondents might have also come from the interaction among students when they talked about Moodle. They were classmates in either the ESL
grammar or reading class, and they were more or less familiar with each other. This kind of attachment because of friendship could shape their opinions to be the same.

Focus Group Interview Notes Analysis

A total of sixteen subcategories were extracted from the data and organized under five main categories including performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC), and former practice (FP). Former practice (FP) is a new category generated in this study. Table 4.5 shows the main categories and subcategories.

Table 4.5 Categories and Subcategories Resulting from the Data Analysis

<table>
<thead>
<tr>
<th>Categories</th>
<th>Subcategories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy (PE)</td>
<td>Study Efficiency</td>
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<tr>
<td></td>
<td>Emotional Motivation</td>
</tr>
<tr>
<td></td>
<td>English Learning Skill Development</td>
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<tr>
<td></td>
<td>Multiple Learning Resources</td>
</tr>
<tr>
<td>Effort Expectancy (EE)</td>
<td>Clear and Understandable Interface</td>
</tr>
<tr>
<td></td>
<td>Integrated Functions</td>
</tr>
<tr>
<td></td>
<td>Little Time Needed</td>
</tr>
<tr>
<td></td>
<td>Easy to Get Access</td>
</tr>
<tr>
<td>Social Influence (SI)</td>
<td>Influence from Instructor</td>
</tr>
<tr>
<td></td>
<td>Influence from Classmates</td>
</tr>
<tr>
<td>Facilitating Condition (FC)</td>
<td>Orientation Program</td>
</tr>
<tr>
<td></td>
<td>Tutorial on Moodle</td>
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<tr>
<td></td>
<td>Technical Support</td>
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<td></td>
<td>Outside Tutorial Guidance</td>
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<tr>
<td>Former Practice (FP)</td>
<td>Perspectives on Moodle</td>
</tr>
<tr>
<td></td>
<td>Experience with other LMSs</td>
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</tbody>
</table>
Performance Expectancy

Performance expectancy (PE) represents the extent to which students consider Moodle to be a helpful tool to improve their learning performance. This expectancy is considered as one of the factors that effect ESL student’s acceptance of Moodle in their English classes. Through the focus group discussions, participants discussed the reason why they liked to use Moodle in their ESL reading or grammar class and how Moodle brought many benefits to improve their English learning performance.

Study Efficiency

One of the most important benefits of Moodle in improving their English learning performance was that it helped boost English study efficiency both inside and outside of the course. This made students feel like using Moodle both during the ESL classes and outside the class time. As student D explained during the focus group, Moodle helped him to complete the English learning activities faster and better. This same student suggested that he was not aware of a learning system that allowed him to submit his homework via Internet when his was studying in high school in China. He described Moodle as an efficient tool for submitting his English homework at anytime and anywhere he wanted as long as it was before the deadline (group 2, February 5, 2013).

Except for the function in Moodle that enables students to submit homework, many participants also mentioned the function of automatic notification, which is always sent into their email box when the instructor adds some learning materials or learning activities through Moodle. Also, this function enables the student to receive updated
messages through email from the Moodle system, notifying them of any new comment posted in his or her topics from other students. Based on the interview notes, student A described that in the ESL grammar class, his instructor often asked them to do grammar correction exercises on Moodle using the discussion forum feature. Everyone needed to post at least two sentences or paragraphs and let other students in the class uncover grammar mistakes in the sentences or paragraphs. Usually, students could not complete this exercise in class, and had to do it asynchronously after school. It was inconvenient to log into Moodle and check corrections other students made on posts back and forth. But Moodle has a function that could send users email containing the content of other’s comments on students’ post instantly, making the checking process easy and time-efficient (group 1, February 1, 2013).

In addition, student D in focus group 2 mentioned that this notification function had also been used to notify students about upcoming events, such as homework deadlines, online conversation participation, as well as journal entry requirements, helping them to manage their time in the class (group 2, February 5, 2013).

Emotional Motivation

Moodle not only does well in improving ESL students’ learning efficiency, but also facilitates ESL students’ emotional motivation to study English in multiple ways. This advantage of Moodle became another significant determinant for the participants in this study to accept Moodle. As discussed by participants who valued seeing their progress in class and checking their final grades in the ESL grammar or reading classes, the “grade book” in Moodle was very useful, allowing them to monitor their grades on
homework, tests, and other class assignments. This feature helped keep the ESL learners motivated to make progress in the classes and built their confidence. Student L in group 4 described the grade book as an incentive function in Moodle because it made him feel a sense of fulfillment every time he checked his grades (group 4, February 11, 2013). Student H in group 3 elaborated on his feelings about the grade book and how much it helped him keep up his study habits. For example, it helped him to create study plans based on the grades he received. Before using Moodle, he had to buy a notebook specifically to record the grades. Using the grade book function in Moodle, he could always know his grade shortly after the teacher finished grading. Moreover, it was easy for him to review grades and make comparisons among them than it was before (group 3, February 7, 2013).

Another tool that plays the role of study emotion motivator for students is the feedback journal set up by the instructor in Moodle. In this, students can write about their thoughts about the course as well as problems they have confronted in learning English grammar or reading. Participants said that they could get more professional suggestions and emotional encouragement through this Moodle function. Students H and J explained that it kept reminding them that they could get help from others, and they could easily tackle any problems before them (group 3, February 7, 2013).

English Learning Skill Development

Moodle provides a wide range of study practices that instructors can choose from. The practices become important training tools for students’ English learning skills. Nearly all participants in each focus group agreed that those English learning practices
that helped them practice English grammar or reading skills were the key factor making
them decide to adopt Moodle for ESL learning. Instructors using the activity module or
questions module embedded in Moodle can create these practices. There are a total of
thirteen ways to create learning skill practices. These methods include using the choice
or quiz activity under the activity module, utilizing calculated, simple calculated,
calculated multi-choice, description, essay, matching, embedded answers, multiple-
choice, short-answer, numerical and true/false under the questions module.

Many students commented that diverse forms of practice successfully kept them
from boredom. These practices engaged them in learning English grammar or reading,
which was once considered to be uninteresting by most of them. In addition, by doing
different types of English grammar or reading practice, the students felt that they could
employ these skills in a more flexible way. They believed this because the repetitive
practice of the same topic in diverse ways reinforced their memory of knowledge.

Multiple Learning Resources

Both students I and J described Moodle as a big knowledge pool, where huge
amounts of English grammar or reading resources were available (group 3, February 7,
2013). They thought some of the resources for English grammar or reading could
expound a branch of knowledge more clearly and understandably than a grammar or
reading textbook did. Further, they thought it helped students better comprehend things
they learned from the various supplemental learning materials which took miscellaneous
forms, such as digital books, picture files, pdf documents, spreadsheets summarizing the
usage of sets of phrases, which were quite readable, or URL links connected to
webpages outside Moodle. Student J said that the instructor shared as much grammar resources as he could with them, and it was helpful for the students’ comprehension. Students could find out any notes they left on Moodle (group 3, February 7, 2013).

**Effort Expectancy**

Effort expectancy (EE) is another construct in the UTAUT model, measuring the effect of a technology user’s perception about the degree of difficulty for using that technology on a user’s adoption decision of it. From the data collected from the participants in this study, effort expectancy is the second factor besides performance expectancy that had an important impact on ESL students’ acceptance behavior of Moodle.

**Clear and Understandable Interface**

According to the participants in focus group 3, aside from saying that the functions of Moodle can improve their English learning performance, they liked to use Moodle because it has a fairly simple and clear interface. Student G stated that using Moodle was not hard for anyone who knew basic knowledge about how to use a computer. The appearance setup of the class was simple and clear. The class names he took on Moodle were listed on his right hand. The middle of the homepage was dominated by course content classified based on the weeks they were going to be used. There were certain clearly defined feature blocks, such as upcoming events, recent activity, and a calendar, evenly disseminated on both sides of the homepage. Additionally, a navigation bar was put on the left side, giving the users an overview of all the content stored in this Moodle course site (group 3, February 7, 2013).
Student M pointed out that the manipulation, including control for the keyboard and the mouse, was the same as people used for browsing other websites. She added later that text instructions as well as clearly identified buttons were available for every movement the user takes (group 4, February 11, 2013).

Integrated Functions

Many students in the study also proposed that one of the biggest advantages that Moodle had for them was its integration of every function they may need in the class. Student G commented that Moodle was a multifunctional platform, which was convenient and powerful (group 3, February 7, 2013). Student I presented his “daily routine” of using Moodle in his ESL grammar class to prove that Moodle met all his study needs, such as communicating with instructors and classmates, submitting homework, accessing to learning resources, and downloading learning content (group 3, February 7, 2013).

Because Moodle includes all the possible functions that are needed to complete a course, students can have their coursework gathered together in just one place, greatly reducing the unnecessary transferring from one system to another.

Little Time Needed

When asked about how much time it took students to get familiar with the system setup of Moodle, nearly half of the participants answered that it took about one class. Student H, who had used Blackboard before, said it took him almost a week to get familiar with Blackboard because of the numbers of complex modules and the confusing interface. This situation did not happen when he began to use Moodle because he found
Moodle to be simple and clear, without an overwhelming flood of complex modules (group 3, February 7, 2013).

Easy to Get Access

Participants who claimed that they like to use tablet computers or mobile phones frequently spoke highly of Moodle’s mobile application (student I, student J, & student L, group 3 & group 4, February 7 & February 11, 2013). They commented that the mobile app of Moodle widened their access scope to Moodle and made using Moodle much easier. They said they could use their tablets to browse and complete learning tasks in Moodle in the same way as they use a desktop or laptop computer. For mobile users, they could browse and download study materials from Moodle via mobile phones.

Social Influence

Social influence (SI) measures the influence of someone important to the user on that user’s adoption behavior of a technology. Those people who may exert an effect on the user commonly come from the community in which the user lives, and the user takes their views and advice as significant guidance.

In this study, many participants expressed that they got to know Moodle because they were required to use it in class. The acceptance process in the beginning was therefore partially involuntarily. Students were largely influenced by people around school in the process of accepting Moodle in their ESL grammar or reading class.

Influence from Instructor

The most important person influencing these students’ acceptance of Moodle was the instructor of the ESL grammar class and the ESL reading class. These study
participants recalled the days when they began to utilize Moodle in class. Not only was the instructor teaching them English grammar and reading, but also the instructor was teaching them how to use Moodle. Since the teacher stressed and required them to use Moodle in completing nearly every learning task in class, students became gradually accustomed to using this system to accomplish their English exercises, submit their homework, and retrieve the supplemental study materials. Student L stated that the instructor pointed out to them how convenient it was to use Moodle to study at the beginning of the class. He also remembered that the instructor devised a lot of interesting English activities and practice on Moodle so students could be involved in an online community during the first week of class (group 4, February 11, 2013).

Moreover these students were not averse to the instructor’s “advertising” Moodle. Instead they valued every suggestion the instructor gave with respect to English learning. They reflected that due to their trust in and respect for the instructor, they appreciated every useful piece of advice that was given by him about how to learn English.

Influence from Classmates

A few participants stated that they were more impacted by their classmates sitting nearby than by the instructor (student A & student C, group 1, February 1, 2013). These students stated that the teacher did not easily affect them. They said that they were not passionate about new technology or new methods. They usually waited until the last moment to adopt them.

As for using Moodle in their ESL classes, these students did not pay much attention to it. Although they needed to complete learning tasks, including reading
papers, submitting homework, and doing English exercises as a requirement by their instructor, they still did not feel like using the system. However, some of their classmates sitting around them successfully changed their minds. Student C, who was used to a traditional class, said that people sitting around him impacted him to use Moodle to a large extent. Before, he could not study without notebooks and pencils, and he took notes word for word. However, one of his classmates sitting next to him changed his learning habits. He showed him how to take advantage of the features in Moodle, such as the *glossary* and *database* the teacher created, to search for words and course materials so that he would not need to write down the content of each lesson in his notebook anymore. Instead he could concentrate on listening in class, while looking for the notes on Moodle after class (group 1, February 1, 2013).

**Facilitating Conditions**

Facilitating condition (FC) refers to the extent to which an individual conceives the help or support from an organization in his or her acceptance of a technology. In the process of focus group discussions, students reported that certain specific programs, supportive instruction in classes, and supporting staff in the English department as well as some external help had an effect on their adoption of Moodle.

**Orientation Program**

Most of participants mentioned an orientation program in which the usage of Moodle was demonstrated. The orientation program started in the first week before their first semester began. They had taken orientation tests in English and Math in that program, and then were required to take part in training about how to use Moodle.
Student J said that the orientation program about Moodle was helpful to students like him who had never used Moodle before. He said it guided him toward familiarity with the Moodle system when he had no idea previously about it. He said that he got his first impression of Moodle this way, and this impression made him feel more prepared when his teacher began to utilize Moodle in the first ESL class (group 3, February 7, 2013).

**Tutorial on Moodle**

Student F pointed out that the tutorial guidance of how to use Moodle played an important role in her adoption decision. She said the Moodle usage tutorial course for students was set in the homepage of the Moodle site for the English Department, making it easy to find. She demonstrated her fondness for the tutorial specifically designed for students. She had failed to follow the teacher’s instructions in class about how to use Moodle, so she took this alternative way to learn the application. As she said, it was not hard to find the manipulation tutorial on the Moodle site at the English Department. In sum, the instructional videos promoted her understanding (group 2, February 5, 2013).

**Technical Support**

Except for asking the teacher in class, students said that they sometimes would look for technical support from the technical assistant in the underground computer lab of the English Department. The technical assistants in the underground computer lab were mostly current students. Many of these technical assistants were familiar with the Moodle system whether in a Windows environment or a Macintosh environment. Student A said that he used to do his homework or complete other assignments for his ESL reading class in the underground computer lab, and at the very beginning of that
course he received help with Moodle manipulation from those technical assistants (group 1, February 1, 2013).

Outside Tutorial Guidance

Student J reported that he used outside tutorial materials available to troubleshoot problems he had encountered while initially using Moodle, and these materials had speeded up his adoption rate of Moodle vastly. The most popular source for this adoption was videos on *YouTube*. He said that he did not know how to edit his profile on Moodle, and the teacher did not mention this topic during the introduction of Moodle’s usage in the first class. So he searched for the answer using key words “Moodle profile” on *YouTube*. The tutorial videos on it just showed him every detail (group 3, February 7, 2013).

**Former Practice (FP)**

Former practice (EP) is not one of the constructs originally offered by the Unified Theory of Acceptance and Use of Technology (UTAUT) model. This category was extracted from the data analysis based on the interview notes from the four group discussions. Six participants reflected that they had used Moodle, BlackBoard, or Edmodo before in classes other than English classes. When they were introduced to Moodle during their English classes, the good impressions they had on the open source LMSs drove them to accept Moodle immediately. The category of former practice was created based on these kinds of responses from the participants, and this category of former practice is different from the UTAUT model’s mediating factor — experience. While experience as a mediating factor can only indirectly influence use behavior,
former practice directly influences use behavior. Experience in the UTAUT model stresses that the longer the user is exposed to a technology, the lower his or her effort expectancy is, and the more likely he or she will adopt that technology. Former practice is a construct that can directly influence use behavior as it refers to the effect of user’s perspectives on the technology gained from previous use of a similar technology and its effect on his or her current adoption of it. Former practice does not relate to the user’s effort expectancy of the technology, but instead it is more related to the technology’s reputation on the users because of extensive use of that technology. According to the responses given by participants who had previously used Moodle and other LMSs, students thought that their good impression of these systems before the ESL program had heavily influenced them in adopting Moodle to learn English grammar and reading.

Perspectives on Moodle

Student G, who had used Moodle before as part of the ESL program, was a graduate student majoring in engineering. He had used many LMSs in addition to Moodle, including Blackboard, Sakai, and Oncourse. He explained that his prior good experiences with Moodle helped when he was re-introduced to this open source LMS in this ESL program, and he could not come up with any reason for not accepting it. He said that it was because Moodle had a good image for him that he ranked Moodle as number one among all the LMSs. The following is an excerpt from the interview notes concerning the comments made by Student G:

My previous use of Moodle works as an “advertisement” for my current use of Moodle. No matter if it is Moodle or Blackboard, they all stand out for the
alternative ways of learning they provide besides traditional learning. It is hard to say if it is the fact that its features improves study performance or if it is the easiness of using them alone that motivated me to use Moodle. Instead, I choose Moodle at this time because I already had a good impression of Moodle based on when I used it previously. The reputation accumulated from my past use of Moodle stands for a guarantee of quality of the learning experience, and kept my enthusiasm about using Moodle (group 3, February 7, 2013).

In sum, student G’s opinion, his former practice with Moodle, left him in a good position to accept Moodle as an innovative way of learning and a somewhat assured good learning experience. He “formulated a beautiful image of Moodle in his heart,” and as a result his feelings and attitudes towards Moodle were extremely positive, leading to his adoption of the LMS. If former practice with Moodle leaves the user with a good impression, he or she will be loyal about using it again.

Perspectives on other LMSs

Both students H and I, who had used LMSs such as Blackboard in an ESL program before, concurred with student G’s accounts. Their past use of LMSs had left them with the impression that using LMSs to learn excelled over traditional ways of learning. The adoption of Moodle for their current classes was thus influenced by their previous perspectives of LMSs (group 3, February 7, 2013).

Summary

Participants identified performance expectancy, effort expectancy, social
influence, facilitating conditions, and former experience as factors influencing their acceptance of Moodle in their ESL reading and grammar classes. This summary will now return to the research questions: Does ESL learners’ “performance expectancy” influence their adoption of Moodle in the English class? Does ESL learners’ “effort expectancy” impact their adoption of Moodle in the English class? What impact can “facilitating conditions” have on ESL learners’ adoption of Moodle in the English classroom? What is the effect of “social influence” on ESL learners’ adoption of Moodle in the English classroom? What other factors, if any, drive ESL learners’ adoption of Moodle in the English classroom?

The findings indicate that both performance and effort expectancy influenced ESL students’ acceptance of Moodle. Along the same lines, “facilitating conditions” also influenced the ESL students’ adoption of Moodle in the English classroom, and social influence was identified as a driving factor as well. In terms of factors outside the UTAUT model (other factors) that might have driven these ESL learners’ adoption of Moodle in the English classroom, former practice was identified. Again, former practice is identified as a factor that influenced ESL students’ adoption of the Moodle in the context where this research took place.

Ten of the participants ranked performance expectancy as the most significant factor that impacted their adoption. Effort expectancy was considered as the second most important factor by nine of the participants. About six participants thought that social influence and facilitating conditions enhanced their acceptance of Moodle. Six participants, who had used Moodle or other LMSs before, mentioned that the good
impression Moodle or another LMSs left on them made them adopt Moodle immediately.

The observation of participants’ interactions during the focus group revealed students’ feelings and attitudes when using Moodle, and at the same time provided a more complete picture about the adoption and rejection of open source LMSs. For example, the balance of dominant participants and not so verbally explicit participants showed that all students were able to express their perspectives; and the flow of the discussions showed that it was important to pay attention and make sure all students understood the questions asked.
CHAPTER 5 CONCLUSIONS

Discussion

The findings from this study suggest that the Unified Theory of Acceptance and Use of Technology (UTAUT) model can be applied to explain ESL learners’ acceptance and use of Moodle in a flipped classroom environment. The participants in this study came from ESL reading and grammar courses. Both classes were created as a flipped classroom environment in which the teacher uploaded learning materials for students to learn on their own before class, and spent most of the class time doing practical exercises and projects. Compared with classes that were not taught in a flipped classroom environment, the ESL students in the flipped classroom needed to rely heavily on Moodle to support their English learning. In this situation, the ESL students had a high degree of intention to adopt Moodle because it is an indispensable tool for them to develop English grammar and reading skills and acquire knowledge about the language and culture. The analysis of the data collected from the thirteen participants distributed over four focus groups showed that four constructs of UTAUT model—performance expectancy, effort expectancy, social influence, and facilitating condition—influenced ESL students’ acceptance and use of Moodle to a large extent. If ESL learners’ performance expectancy and effort expectancy on Moodle were high, they would accept and use Moodle quickly. Social influence was also a reason for ESL learners to adopt Moodle. The study suggested that although facilitating condition exerted a limited
impact on ESL students to adopt Moodle, it may prevent ESL learners from abandoning Moodle.

In addition, ESL students who previously used Moodle or other LMSs quickly adopted or consistently resisted the system based on their previous impressions of Moodle or other LMSs.

Previous study of South Korean trainees’ acceptance of e-learning in workplace suggested that extrinsic motivation factors, such as performance expectancy (PE) can only exert an effect on trainees’ acceptance of e-learning (Yoo, Han, & Huang, 2012). Yoo, Han, and Huang (2012) concluded that there was no direct causal relation between trainees’ e-learning adoption and job-promotion because there was no guarantee that trainees who adopted e-learning would get promotions after the training. However, many participants in the current study reported that high study performance in ESL grammar and reading class were significant to them, and Moodle’s features helped them to increase their performance as well as their study efficiency.

As to social influence (SI) and facilitating condition (FC), in a study conducted in higher education in Taiwan, Chiu and Wang (2008) found that social influence (SI) and facilitating condition (FC) could not significantly predict college students’ acceptance behavior of a web-based learning system. Nevertheless, according to some participants in the current study, both social influence and facilitating condition played important roles in facilitating their adoption of Moodle in their ESL program. Even though this difference in result may, to a certain extent, be a consequence of a small sample, it also may mean that social influence and facilitating condition are still two
undeniable factors that could impact a person’s adoption decision at least in the sphere of ESL learning.

In the current study, several participants also mentioned their past practice with Moodle or other similar LMSs, and considered it a crucial factor affecting their use of Moodle in the ESL program. All of them had an already formed perspective on open source LMSs, including Moodle, as supportive of learning. Students described that it was because of good learning experiences with Moodle that they developed a kind of “consumer loyalty” towards Moodle. Several previous studies about reasons leading to people’s technology acceptance behavior had mentioned the notion of “conformity,” which means the degree to which an individual considers that an innovation is consistent with existing practices, values, needs, and experiences (Chau & Hu, 2002; Moore & Benbasat, 1991; Rogers, 1995; Taylor & Todd, 1995b). However, former practice in this study is beyond experience. It stresses user’s product image and product loyalty rather than the degree of familiarity of the user with the technology accumulated from previous experience.

Contributions of This Study

The purpose of this study was to investigate factors that impacted ESL students’ interaction with Moodle—an open source LMS—using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. According to the findings, the participants in this study were mainly impacted by five factors: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC), and former experience (FE).
Performance expectancy (PE) was the most significant factor that influenced students’ adoption of Moodle. To them, the main purpose of using Moodle in the ESL grammar or reading class was to improve their English grammar or reading ability. The features of Moodle provided them with an alternative learning environment to traditional learning, and enabled them to reinforce their English grammar or reading skills and improve their knowledge. The grade book feature of Moodle helped them track their study progress, inspiring them to make more effort on the homework. Diverse forms of learning materials uploaded by the teacher on Moodle got them in touch with many more sources of knowledge than before. Activities and exercises designed on Moodle also helped these participants to a large extent get plenty of practice with grammar or reading, and created scenarios for them to apply what they learned.

Effort expectancy (EE) was ranked as the second important factor. A clear and comprehensible interface offered students no difficulty in finding out content materials prepared by their instructors. Integrated functions inside Moodle enabled students to download course materials, complete and submit homework, and retrieve English grammar or reading practice online as well as communicate with peers and teachers in the Moodle forum, among other affordances, on the same platform. In addition, the availability of a mobile app version of Moodle allowed students to access Moodle from multiple devices ranging from a computer desktop, laptop, or tablet as well as from a mobile phone, offering an easily-accessible environment. Furthermore, it did not take more than three days for students to get familiar with the setup of Moodle.
Social influence (SI) was listed in the third place. Several participants reported that the major influence on whether to adopt Moodle came from the course instructor during class, because he convinced the students that using Moodle would give them more opportunities to improve their English proficiency. For other participants, classmates contributed more to their adoption of Moodle though certain useful suggestions.

Facilitating conditions (FC) had equal importance as social influence (SI). The Moodle orientation program, which was carried out one week before the first semester classes began, guided students to quickly grasp a basic usage of Moodle. Existing Moodle tutorials also helped some students who were left behind in class to regain confidence with Moodle to accomplish their work. Also, technical assistants in the underground computer lab quickly helped students with problems they had confronted.

Finally, former practice emerged as a new driving factor to ESL students’ adoption of the Moodle in the context where this research took place. Participants who had previously used Moodle or other similar LMSs showed the importance of their past experience with these systems to their adoption of Moodle in ESL classes. The good learning experiences and knowledge foundation they had acquired using Moodle or other LMSs before enhanced their adopting process. This interesting finding from students’ own opinions has added a potential construct—former experience—to the UTAUT model. Former experience refers to users’ perception of the degree to which their previous experience with the same or a similar technology impacts their adoption of the new technology. According to the participants who had previously used Moodle or
another LMSs, the good impression of Moodle or other LMSs made them more willing to accept Moodle; former knowledge about the manipulation of Moodle or another LMSs made them experience less difficulty using Moodle, which sped up the adoption process of Moodle.

This new construct makes up for what the UTAUT model had lacked in perspective of linearity, and it has provided an additional factor in considering ESL students’ adoption of Moodle. This is an important contribution of this research study.

Implications

The presented study has several implications for educational administrators and instructors who are teaching ESL students using Moodle. As the findings indicated, the main factors exerting effect on ESL students’ acceptance and use of Moodle were performance expectancy, effort expectancy, social influence, and facilitating conditions. These findings validate the UTAUT model from the perspective of a qualitative study. The study also found that former practice—previous use of Moodle or the other LMSs that leaves an impression on the user—affected ESL students’ adoption of Moodle in English classes. The implications focus on how to increase ESL students’ acceptance of Moodle in English classes.

First and foremost, the findings of the research suggest that performance expectancy had a significant effect on participants’ adoption of Moodle for their English class. Functions in Moodle that could improve study efficiency, facilitate emotional motivation, cultivate English learning skill, and provide multiple learning resources were the reasons for participants to consider adopting Moodle. Therefore, this study implied
that the design of English class for ESL students on Moodle should take advantage of those Moodle functions that help improve ESL students’ study performance. This focus would attract ESL students to adopt Moodle. For example, English instructors can use Moodle’s functions such as assignment submission, online quizzes, and others to improve their ESL students’ study efficiency; they can also use the grade book function in Moodle to enable ESL students to keep track of their grades, uplifting their emotional motivation. Instructors can also develop resourceful English learning practices that upgrade ESL students’ English learning skills. Instructors may then also need to expand their knowledge pool in Moodle.

Moreover this research indicated that effort expectancy exerts influence on the ESL students’ acceptance of Moodle. The suggestion for future English classes using Moodle is that keeping a clear and understandable interface will prevent confusion. Also it is recommended that instructors employ Moodle’s functions in an integrated way so that ESL students can deal with all the study tasks in a single place. In addition, educational administrators should enable ESL students to access Moodle site from multiple platforms.

Furthermore, it was implied in this study that social influence as well as facilitating conditions has a certain degree of impact on some ESL students’ adoption of Moodle. It is suggested that the instructors pay more attention to helping ESL students get familiar with Moodle, and educational administrators in schools should give more instructional support, such as a Moodle orientation course.
Finally, it implies that former practice has an effect on ESL students’ acceptance of Moodle. For the ESL students who have used Moodle or other LMSs before, the instructors have to determine whether they have a good or bad impression of those systems. If the impression is good, there is little that the instructors need to do; if the impression is bad, the instructors need to take more time to change these ESL students’ opinions of Moodle.

Limitations and Further Research

First of all, the focus group technique exhibited some limitations. For one, relatively small numbers of respondents can reduce the representativeness of the sample, which makes it difficult to generalize the results to a larger population. This study can thus only be regarded as a case study. For another, the discussions and conversations between the researcher and the respondents, as well as the interaction among respondents, can impede the independence of respondents’ answers. Although the researcher had limited the number of participants in each focus group discussion to four people in order to avoid the shortcomings of focus group method, there is no guarantee that some students in the group did not influence another participant’s contributions.

Secondly, the selection of participants recruited was restricted to ESL students at low intermediate level, leaving out ESL students at other levels of English ability. This limitation has the potential to reduce the representativeness of this study further. In the future, the researcher hopes to expand the sample to a wider range, including ESL learners at lower English ability levels and ESL learners at higher English ability levels than participants in this study.
Thirdly, as the participants were all volunteers, their personality, to some extent, was more inclined to be active rather than passive compared to those who chose not to take part. In this way, the results of this study lack the ability to explain the adoption behavior of Moodle of ESL students who are less active or passive in personality.

Finally, the focus group discussions were not audio-recorded because participants did not feel comfortable talking to an audio-recording device. All the conversations were recorded by hand, so it is very conceivable that the researcher missed some important ideas that participants mentioned or even overly emphasized others.

Based on the findings of this study, further research on factors influencing the ESL college students’ acceptance of Moodle in their English class can address the limitations outlined above as well as several other areas. Firstly, the small-size sample in this study calls the explanatory power of the findings into question, and future research can conduct a survey with a bigger sample base to test the explanatory power of the findings in this research. Secondly, video-recording or audio-recording is recommended during interviewing and discussion for future study in order to guarantee a complete script on which findings are based.

Regardless of the limitations, however, this research has brought to the surface important findings that help to move the field forward. Surely, further research will help solidify and emphasize these findings.
REFERENCES


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Zeng, Y.Y. (2005). The study of employee’s acceptance towards enterprise’s online-learning system-Take China Steel as an example. Master Thesis, Department of Business Studies, National Sun Yat-sen University.
# APPENDIX A. GROUP DISCUSSION AND QUESTION GUIDANCE

<table>
<thead>
<tr>
<th>Main Topic</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>1. What aspects of Moodle do you think help improving your chances of success in the IEOP Grammar/Reading Class?</td>
</tr>
<tr>
<td></td>
<td>2. What aspects of Moodle do you think prevent improving your chances of success in the IEOP Grammar/Reading class?</td>
</tr>
<tr>
<td>Expectancy</td>
<td>3. What do you think Moodle has done well or not so well in increasing your efficiency in studying English grammar and reading?</td>
</tr>
<tr>
<td></td>
<td>4. What do you think Moodle has done well or not so well in improving your English grammar/reading competency?</td>
</tr>
<tr>
<td>Effort</td>
<td>1. How do you feel about Moodle’s navigation?</td>
</tr>
<tr>
<td></td>
<td>2. How do you feel about Moodle’s ease of use?</td>
</tr>
<tr>
<td>Expectancy</td>
<td>3. How long did it take you to get familiar with using Moodle (approximate number of hours)?</td>
</tr>
<tr>
<td></td>
<td>4. Do you think Moodle is easy or complex to use? Why? Why not?</td>
</tr>
<tr>
<td>Facilitating</td>
<td>1. How did you learn to use Moodle? For example, through the use of a specific Moodle training program?</td>
</tr>
<tr>
<td>Conditions</td>
<td>2. If there was such a program, please describe what you have learned about Moodle in that program. And do you think that program was useful?</td>
</tr>
</tbody>
</table>
for you to be able to use Moodle efficiently in the IEOP Grammar/Reading class? Why? Why not?

<table>
<thead>
<tr>
<th>Social Influences</th>
<th>1. Who recommend you the use of Moodle?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. If this class did not require it, would you have used Moodle to learn English grammar and reading?</td>
</tr>
</tbody>
</table>

| Participant's Opinions | What do you think about other learning management systems similar to Moodle, such as BlackBoard and Edmodo? Do you have any preference? Why? Why not? |
APPENDIX B. DEMOGRAPHIC QUESTIONNAIRE

Demographic Section

(Direction: Please answer the following questions by ticking the choice, or inserting your information.)

1. Your Gender:
   - Male
   - Female

2. Your Age: _______

3. Your Academic Major (if none, please insert “none”):_______

4. Your Grade:
   - Freshman
   - Sophomore
   - Junior
   - Senior

5. Your Native Language:_______

6. Number of months enrolled into Intensive English and Orientation Program in Iowa State University: _______ months

7. Number of months living in U.S. :________ months

8. Have you ever used Learning Management system like Moodle or Blackboard before this program?
   - Yes
   - No
Institutional Review Board
Office for Responsible Research
1138 Pearson Hall
Ames, Iowa 50011-2875
515.294.9596
FAX 515.294.8287

APPENDIX C. INSTITUTIONAL REVIEW BOARD APPROVAL MEMO

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 2/13/2013
To: Jing Lu
219 S Sherman Ave, Unit 8
Ames, IA 50010

CC: Dr. Ana-Paula Comia
N165B Lagomarcino Hall
Larysa Nadolny
N164 Lagomarcino Hall

From: Office for Responsible Research

Title: E-Learning: Investigating Factors Affecting ESL (English as Second Language) Students' Adoption of Moodle as LMS (Learning Management System) for Their English Classes

IRB ID: 13-078

Study Review Date: 2/12/2013

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

1. (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
   • Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; and
   • Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

• You do not need to submit an application for annual continuing review.

• You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. Only the IRB or designees may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

Please be aware that approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the...
APPENDIX D. CONSENT FORM

Consent Form for:  E-Learning: investing factors effecting ESL (English as Second Language) student’s adoption of Moodle as LMS (Learning Management System) for their English class

This form describes a research project. It has information to help you decide whether or not you wish to participate. Research studies include only people who choose to take part—your participation is completely voluntary. Please discuss any questions you have about the study or about this form with the project staff before deciding to participate.

Who is conducting this study?
This study is being conducted by Jing Liu.

Why am I invited to participate in this study?
You are being asked to take part in this study because you are an ESL (English as Second Language) student studying in IEOP reading/grammar classes, which are using Moodle as a learning tool. You should not participate if you are not studying in IEOP reading/grammar classes.

What is the purpose of this study?
The purpose of this study is to find out possible factors that contribute to ESL (English as Second Language) student’s acceptance of Moodle as an English learning tool for their English class.
**What will I be asked to do?**

If you agree to participate, you will be asked to take part in a focus group discussion.

The typical questions you will be about your perceptions, feelings about using Moodle in your English class and why you would like to use it.

And you will only need to participate in one group of discussion for only once.

Your participation in the discussion will last for 30 minutes.

And your conversations during the course will be recorded as audio.

**What are the possible risks and benefits of my participation?**

Risks—there is no personal risk or discomfort as a result of your participation in this focus group discussion.

Benefits—you may not receive any direct benefit from taking part in this study. But we hope that this research will help us understand ESL learner’s experience with Moodle, and improve its usage in English classes for ESL learners.

**How will the information I provided be used?**

The information you provide will only be used into this research, no other institutions will be involved.

**What measures will be taken to ensure the confidentiality of the data or to protect my privacy?**

Records identifying participants will be kept confidential to the extent allowed by applicable laws and regulations. Records will not be made publicly available. However, federal government regulatory agencies, auditing departments of Iowa State University, and the ISU Institutional Review Board (a committee that reviews and approves research
studies with human subjects) may inspect and/or copy your records for quality assurance and analysis. These records may contain private information.

To ensure confidentiality to the extent allowed by law, your name and other private information obtained in this research will not be revealed, and can only be accessed by researchers in this study. If the results are published, your identity will remain confidential.

**Will I incur any costs from participating or will I be compensated?**

You will not have any costs from participating in this study.

**What are my rights as a human research participant?**

Participating in this study is completely voluntary. You may choose not to take part in the study or to stop participating at any time, for any reason, without penalty or negative consequences. You can skip any questions that you do not wish to answer.

Your choice of whether or not to participate will have no impact on you as a student/employee in any way.

**Whom can I call if I have questions or problems?**

You are encouraged to ask questions at any time during this study.

- For further information about the study contact Jing Liu (jliu1@iastate.edu), Ana-Paula Correia (acorreia@mail.iastate.edu) or Larysa Nadolny (lnadolny@iastate.edu).

- If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu.
or Director, (515) 294-3115, Office for Responsible Research, 1138 Pearson Hall, Iowa State University, Ames, Iowa 50011.

Consent and Authorization Provisions

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant’s Name (printed) __________________________________________

___________________________________________

( Participant’s Signature) (Date)