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# 學習者使用線上學習社群意願之研究

# The Study of Learners' Intention to Use an Online Learning Community

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本論文係提交國立台灣大學

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# 中文摘要

隨著網際網路的興盛與資訊科技的進步，愈來愈多的學習者加入線上學習社群做為傳統課程延伸的另一種學習管道。在本研究中，我們提供線上學習社群讓學習者可在社群中學習英文。同時，為了推廣優質的英文讀本，本社群定期舉辦閱讀競賽讓線上成員參與相關的活動。因此，本研究的目的為使用科技接受模式的延伸藉以探討學習者是否願意再度使用線上學習社群。

在本論文以科技接受模式為基礎，並延伸外部變數以及感知變項做為本研究所提出的模型和假設，以探討學習者對於線上學習社群的使用意願。共有 436 份有效問卷，透過結構方程模式統計方法進行資料分析與模型驗證。研究結果顯示本研究所提出的假設均受到支持，表示所提出的模型可以有效預測學習者是否會繼續使用線上學習社群。

關鍵字：線上學習社群、使用意願、科技接受模式、動機理論

# Abstract

With the booming of Internet and progress of information technology, more and more learners join online learning community as another learning channel to be an extension of traditional class. In this research, we provide an online learning community for learners to study English on it. Meanwhile, to promote excellent English books, our community holds regular related activity like reading contest for online members. Hence, the purpose of this study is to use the extended TAM model as our research framework, and would like to understand whether learners are willing to reuse an online learning community.

The study of this thesis, we take the Technology Acceptance Model as a foundation and extend the external variables as well as the perceived variables as our model and propose a number of hypotheses. A total of 436 Taiwanese senior high school students participated in this research, and the online learning community focused on learning English. The research results show that all the hypotheses are supported, which indicates that the extended variables can effectively predict whether users will adopt an online learning community. Finally, we discuss the implications of our findings for the future development of online English learning communities.

*Keywords:* intention to use an online learning community, Technology Acceptance Model, participative motivation, motivation theory

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# Chapter 1: Introduction

## 1.1 Background

With the development of World Wide Web, more and more people are participating in learning activities on the Internet. When a number of people with a common learning goal form a group, it is called a learning community. Online learning communities are gradually altering traditional learning styles because of the pervasiveness of the Internet. Members of these communities come from various places, and have different educational backgrounds and different proficiency levels. They interact for mutual learning of a common subject, such as a second language. In general, online learning community provides a main subject to learn for high school students. Take high school students in Taiwan as an example, English learning is one of a main subject that government pays full attention to.

English has become an important tool of international communication in the era of globalization and more frequent international exchanges among businesses as well as education. As a non-English speaking country, it is important for Taiwan, which has made English as a foreign language, to improve the English proficiency in order to connect with the world stage. In 1998, the Panel of Grade 1-9 curriculum in Taiwan's

Ministry of Education made English a learning subject for primary schools, taking down the age of learning English in the compulsory education from junior high school to primary school. In recent years, the government has been aware of the incompetence of Taiwanese students' in TOEFL scores when comparing with peers from Singapore, Hong Kong and China; therefore, the Taiwan's Ministry of Education started promoting and encouraging all students to take the GEPT (General English Proficiency Test) since 1999. The focus of the test is to provide a reliable and fair examination for each level of English proficiency. Thus, English learning is not only the personal demand, but also a global trend when heading towards the new century.

Rovai (2002) observed that, in an online learning community, all members expect that their learning needs will be satisfied by pursuing a common learning goal. It could be said that the members develop a common "collective consciousness", because they build relationships with one another and their instructors via the user interface. The diverse interactive media play a support role in learning. Therefore, it is necessary to consider the needs of learners and the characteristics of each online learning community when designing online learning courses (Dede, 1996).

There are a lot of English online learning communities that provide rich materials and contents, so that users could utilize the specialties such as the convenience of the Internet and personalized learning. This is different from traditional way of learning

English in the classroom. The environment of online learning community has gradually been formed as more and more people join the website and learn to each other. Members of the community could share and exchange their experiences during the process of learning through an interactive way. In the context of traditional classroom learning, teachers who determine the curriculum guide the course through face-to-face learning. Students absorb the course content from the teachers in the class and interact with peers or instructors through discussions. In general, the teacher plays an authoritative role. It is difficult for us to know whether students are active or passive participants. They may need to complete the work or task assigned by the teacher and get credits after passing the exam. However, we do not know whether such a learning method is suitable for everyone. Undoubtedly, the traditional classroom learning model is still the norm, despite the restrictions on time, space, and class sizes.

To advocate excellent English books and to enhance English comprehension for high school students, IWiLL, an English online learning community, has been regularly holding annual English *Reading Challenge* contest since 2000. Averagely, there are thousands of students who are also IWiLL online members signing up for this contest. However, how are these online members going to be influenced in their future language learning by participating in such a contest? What are their

participative motivations? All of these are intriguing issues for researchers.

The current trend in education is to apply technology in the learning process. As more teachers adopt information technology to assist instruction, more researchers will investigate the issue of technology-integrated education. Davis (1986), who proposed the Technology Acceptance Model (TAM), suggested that the ease of use and usefulness of a technology affect users' intention to use it. Therefore, we can predict users' willingness to accept technology based on their perception by using TAM model. In this study, we build an Intelligent Web-based Interactive Language Learning (IWiLL) community as an online English learning platform for high school students throughout Taiwan. Members of this community can share their learning experiences and discuss course contents with each other. Specifically, we use the TAM model as our framework, and seek other factors that may affect Intention to Use an Online Learning Community to construct our model. We also discuss the casual relationships between the identified factors and explain the real-world phenomena.

## 1.2 Purpose

In this thesis, the aims of this study are as follows.

(1) To identify the factors affecting the intention to use an online learning community.

(2) To develop the extended TAM model as our framework and understand whether learners are willing to reuse an online learning community.

## 1.3 Limitation

This research has some limitations that we should acknowledge. First, although IWiLL has many members, most of those who answered the questionnaire were high school students. In other words, very few students who had graduated from high school and entered university answered the questionnaire. This raises a potential research issue in that future studies should seek ways to encourage such students to respond to a questionnaire. Second, this study focuses on the context of high school students learning a second language in the online learning community. Since most of the respondents were high school students with higher homogeneity, we did not analyze their demographic data. In the future, if we choose college students as our targets, we will classify their profiles in terms of gender, age, educational background, as well as freshman, sophomore, junior, or senior. Then, we will be able to compare the difference of categories. Third, the proposed model contains seven constructs and adopts the self-report approach for the users to answer the questionnaires. When measuring users' subjective psychological variables, it is inevitable that there will be a common method bias. In the future, in addition to improving the questionnaire's design, we could compile the users' learning portfolios by adding some objective methods. For instance, we could extract the number of log-ins, the number of learning

hours, the frequency of interacting with others, and the learning scores from the user profiles in the database. Then, we would be able to control and track the students' learning situations in the online learning community. Fourth, all of the participants in this research are all from online members of IWill and high school students national-wide in Taiwan. IWiLL is also a well-known domestic large online English learning community. Therefore, no matter the samples or the cases selected from online community are representative. The findings cannot be generalized to other settings without additional research. For example, high school students are quite homogenous in terms of their academic background, whereas college students are more heterogeneous because they major in a variety of subjects. Specifically, for future research about the college students' intention to use an online learning community it will be interesting to include other variables to measure the proposed model results. The last constraint is that the learners' were encouraged to participate in the IWiLL online learning community by their high school English teachers. For example, a teacher might have asked the learners to join the discussions on some issues, observe their interaction during the online session, and then evaluate their learning performance. Thus, identifying the motivational factors that encourage learners to participate in various learning activities continuously will be a part of our future research.

## 1.4 Organization

The first chapter introduces the development of the online learning community. Improvement in IT leads to a great change in the way how people learn. The learners' intention to use an online learning community in the future will be our main research issue. The technology-integrated learning plays a more and more important role in the education. In addition, the learners' participative motivation in reading contest on an online learning community will be also mentioned in this chapter.

The theoretical development related to this research and literature review will be discussed in details in the chapter 2. This is based on TAM model to discover from the literature that what factors would affect the intention to use the online learning community, and to inspect the conceptual model as well as tests the hypotheses.

The third chapter takes IWiLL as a case study to describe the current status of the online learning community, including the current situations of the learning community, system architecture, and system function. Moreover, the annual Reading Challenge contest held by IWiLL is also introduced in this chapter in details.

Research methods, subjects, data analysis, results, and discussion are also presented respectively in chapter 4, 5, 6. In the chapter 7, we make conclusions and suggestions for further study in the future according to the research results.

# Chapter 2: Literature review

## 2.1 Online learning community

### 2.1.1 The definition of online learning community

The concept of the online learning community comes from the virtual community. The evolution of online learning community can be traced back to the technological revolution. People have grouped an online learning community to share knowledge and experience through history. Through Internet, the online learning community extends the physical space of the community to the cyberspace (Lewis, 2002).

Virtual community is defined as a group of people who have the same interest and background interact on the internet (Boczkowsk, 1999; Dennis, 1998; Foreman, 1999). A community is a group of individuals with similar characteristics, communicating and interacting through a framework connected by internet. This is the process of how virtual community is formed (Umiker-Sebeok & Kim, 1999). Through the connection of internet, people from different background can study, discuss and share knowledge with each other in specific domain. At the end, an online learning community is established (Heckscher & Donnellon, 1994). Learners create their knowledge with peers, instructors, and digital learning materials.

Because the online learning community is a concept of knowledge sharing, each learner could be a giver or a receiver of knowledge. The knowledge is gradually constructed through interaction and communication by individuals with different specialization, further creating a learning community (Collins & Bielaczyc, 1997). By sharing a common learning goal and social interaction during a period, learners discuss the learning details and share learning experiences with each other in an online learning community (Augar et al., 2004). Therefore in an open online space, members from different background gather on the Internet to discuss, communicate, and share knowledge to reach the purpose of learning. This is so-called online learning community. The purpose of the online learning is to construct a learning community. It emphasizes on ”learning” not “teaching”. Students learning on the Internet must actively “collaborate” and “create” to acquire knowledge (Hong, 1999).

### 2.1.2 The characteristics of online learning community

The online learning community is created by the development of education and ICT (Information and communication technologies). The participants can learn together by Internet. They can share the learning resource and experience without the limitation of time and space. On top of it, manpower and time spent on data search can be saved (Chang, 2004). Brown & Campione (1994) lists the characteristics of learning community as follows:

(1) Distributed expertise

Distributed expertise (Saloman, 1993) is every member has different domain knowledge of specialty.

(2) Participant structure

The community members play different roles by participating in all kinds of activities. The members must understand and adapt themselves into the differences of other participants, further playing a role that suits themselves.

(3) Community of discourse

The members in a community discover mistakes and revise immediately by discussion, conversation and brain-storming with others. And then they continuously communicate with other members.

(4) Multiple zone of proximal development (ZPD)

The concept of the zone of proximal development was proposed by Vygotsky (1978). Learners can enhance their learning effects with others assistance by different pace and methods. The knowledge and technology they learn are stored separately in multiple zones of proximal development to facilitate the growth of other domains.

Regarding elements of online learning community, Palloff & Pratt (2007) divide them into three categories: people, purpose, and process. They believe that the outcome of a well-constructed, community-oriented online course is reflective and transformative learning. Figure 2.1 illustrates the elements of online learning communities and their effect on learning.

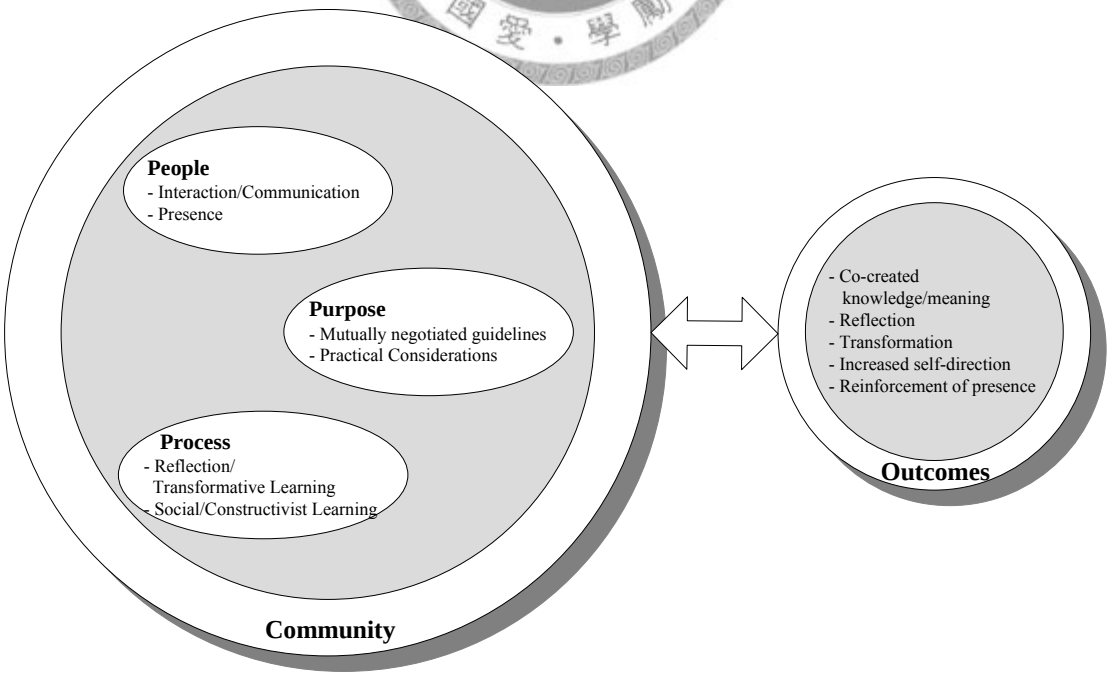



Figure 2.1 The elements of online learning communities

(1) Human is a very critical element in the community establishment. An instructor can play as an assistant to lead learners to be engaged in online curriculum exploration and an online learning activity.

(2) In the online learning community, clear guidelines must be established and members are expected to follow the guidelines for the purpose of the community. Such as the time, the size of the group, and the ability to build a sense of security would also affect the group cognition to the purpose.

(3) In the developmental process of the online learning community, interaction and collaboration play critical roles. Member communication and interaction can be enhanced by collaborative tasks and teamwork. At the same time, social learning and constructivist learning with others are very critical for the development process of the online learning community.

The quality of the online learning community operation results in different outcomes. If online learners are limited by location, time, or content, it would perhaps lead to a situation that less and less people are willing to use the online learning community again. The outcome is an environment rich in the potential for collaborative learning and the social construction of meaning, as transformative learning and reflective practice.

### 2.1.3 The principles of an online learning community design

Wenger et al. (2002) proposed seven principles to improve the traditional rigid community design and to inspire the internal drive of the community – the participants are taking the intuitive to make the online learning community full of energy and action (Wenger, 2002; Winkelen, 2003).

*Principle 1: Advanced design*

The structure of community in the beginning is simple. It then gradually attracts potential members to join. New members will bring new interests to lead the community to different direction. After establishing the community relationship, core members gradually introduce other elements to make the community grow up. For example, the online community is originally just a marginal group in an organization. But then it is advanced to a crucial status when overall internet environment is widely used.

*Principle 2: Start a dialogue with different viewpoints inside and outside a community*

The good design of a community needs to understand members' potential to acquire knowledge. But it usually helps members to see all kinds of possibility from the outside point of view. A good leader can observe the design of other communities to improve their operating strategy for their communities.

*Principle 3: Invite different level of participations*

The reasons people join a community are different. The degree of participation can be divides into three levels. People in the first level are called small core group. This level does not contain a large population, usually taking up 10%~20% of whole group. The core group of people actively participates in discussion and often later become leaders of communities. People in the second level are called active group. They would regularly participate in community activities and occasionally express opinions. But their participation degree is not higher than core group. The population at this level usually occupies 15%~20% of the whole group. Obviously most of people in communities are in the marginal region and inactive participants. They quietly observe the interaction between core group and active group. Maybe this kind of absent-minded participant would be frustrated in a traditional meeting in real world. But it becomes another story when meeting online. This group isn't passive as they look like. They actually acquire knowledge by observing others' interaction and make good use of it. Moreover, the so-called third level of group is the outsider. They who observe community situation and inactively participate in the virtual learning community are possibly researchers, educators, and even providers of the online learning community. In conclusion, a good design of the community allows all of the people from different levels to have a sense of participation.

*Principle 4: Develop public and private domains*

A public community activity makes members to consider themselves as a team member by a ceremony and at the same time know other participants in this community. But too many public group activities have wrong ideas of community design. The core of community is to build the bonds between members. Member relationship comes from one-to-one interaction. The tighter the bond between members, the more they are familiar with each other. And they will have stronger interaction in various ways in public domains.

*Principle 5: Value is a focus*

Most of community participation comes from volunteer. Usually, the core value of a community is not clear in the beginning. But after continuous gathering, activities, and relationship-building, the core value is then discovered.

*Principle 6: Combine familiarity and stimulation*

A community is not like a company or an organization. It can comfortablely provide or accept others' suggestions under the situation of no interest conflict. Community connection will be more diversified when members interact with one another through meeting, seminars and other forms of gathering.

*Principle 7: Create community tempo*

The community tempo would affect members' online interaction frequency. For

example, some library community has an annual conference and an online forum. Posting articles in the forum was not active after six months of the annual meeting. Another engineering community holds a video conference every two weeks. There are many face to face conferences in a year. The online activity increased sharply when video conference and a face to face conference where held before and after. Each community tempo is not absolutely the same. Finding the most appropriate tempo at every stage is the key point of community development.

## 2.2 Motivation theory

### 2.2.1 Motivation

Motivation has been a term widely used in educational and psychological study fields for decades. Motivation is an internal status and process making an individual physically take action and maintain the action toward a goal (Chang, 1994). Motivation is the internal drive to learn again. With this drive, individuals could continually learn until achieving their learning purposes. It means that any learning behavior must be driven by the learning motivation (Kasworm & Marienau, 1997). It shows that motivation is an internal psychological status and also an internal factor to facilitate an individual to be engaged in certain activity.

We will discuss the following several important related theories about the development of the motivation theory for past several decades.

(1) Need hierarchy theory

Maslow's need hierarchy theory (Maslow, 1954) puts human need in hierarchical levels. He thought motivation is related to human multi-level needs. The needs could be arranged and described by the hierarchical method from low-ordered physiological needs to high-ordered mental needs - pursuing self-actualization. In general, higher-ordered needs will not be produced when lower-ordered needs are not satisfied

yet.

(2) ERG theory

Alderfer's ERG (Existence - Relatedness - Growth) theory (Alderfer, 1969) deemed that individuals could pursue more than one kind of needs at the same time without priority. In other words, all kinds of needs could exist and stimulate motivation at the same time. This theory is generally similar with Maslow's hierarchy need theory. Alderfer classified humanity's needs into three levels from bottom to up.

(a) Existence needs.

It is equal to Maslow theory's physiological needs and safety needs.

(b) Relatedness needs.

It is equal to Maslow theory's social needs and esteem needs.

(c) Growth needs.

It is equal to self - actualization needs in Maslow theory.

But Alderfer thought that a person may be affected by more than one need to affect. Moreover, when the satisfaction of higher-ordered needs is suppressed, willingness to seek for the satisfaction of lower-ordered needs would be increased. Accordingly, the extent of need for relationship and growth would be strengthened following higher satisfaction level (Alderfer, 1969).

(3) Learned needs theory

McClelland et al. (1953) thought needs are deeply affected by culture and society, including three needs, namely, need for achievement, need for affiliation, and need for power. Everyone usually would have more or less three kinds of needs mentioned above. However, individual has different focus. The theory content is as follows:

(a) Need for achievement

This indicates a person is not only willing to do but also dedicating themselves to achieve with internal drive for an very important or valuable job in their minds.

(b) Need for power

It is an internal drive of individual's hope to have an influence on others and do their best for their work.

(c) Need for affiliation

It is an internal drive of individual's expectation to maintain good relationship and gain friendship with others.

Because of the theory above, needs are triggered by motivation so that different needs are created under different environments. And different needs would lead to different motivation. When individuals have needs, motivation is developed. Either the motivation is resulted from the internal psychological satisfaction or the external incentives cause, personal drive is created to have motivational behavior.

### 2.2.2 Learning motivation

In online learning environments, students are provided a great deal of autonomy and personal responsibility to manage their own education. Two prominent theories on this topic include both Wedemeyer's theory of indepenent study and Moore's self-regulated learning theory. Wedemeyer (1988) describes distance learners as operating in an isolated learning environment, where individuals must study independently so that the learning effects will be produced. As a result, Wedemeyer argues the factors most critical to a student's success involve the student's sense of personal responsibility, and the role of educational institutes in providing real-time learning resources as well as looking after the individual's learning needs.

In Moore's (1984) self-regulated learning theory, Moore thought that distance learning institutes provide unique learning conditions for both learners and instructors. Specifically, distance learning requires students to be independently engaged with the learning process, and actively communicate with instructors rather than passively absorbing information inside classrooms. Thus, the efficiency of the learning process is deeply influenced by the relationships between learners, instructors, and communication media.

From the view of Moore and Wedemeyer's theories, learners are participating in learning environments that are far more autonomous than in the past. The chance of

success in this educational format is also significantly influenced by each student's motivations (Miller & Miller, 2000; Porter, 1997). Accordingly, the learner's motivation is viewed as stemming from an internal drive to achieve some series of personal goals.

Several other researchers hold similar ideas. Ausubel (1968) described the learner's motivation as a key support in the individual's learning process. Huang (1996) suggests that the individual's motivation helps direct the individual to learn new things, maintain their interest in the subject, and pursue the goals set forth by their instructors. In learning, motivation is used to explain how learners start and maintain certain learning behaviors in order to achieve a specific goal. It involves the student's interests, suitability, expectations, and results (Keller, 1983).

In this study, we focus on multiple types of possible motivation patterns. Here, the concept of motivation can be divided into two categories: intrinsic and extrinsic motivation. Intrinsic motivation refers to the interesting, satisfying, and pleasant emotion that users feel when engaging in an activity. Extrinsic motivation refers to external objects such as rewards used to encourage users to engage in various forms of behavior (Deci, 1995). For example, learners who are interested primarily in satisfying their curiosity or seeking knowledge for knowledge's sake have intrinsic motivations. Learners who are primarily motivated by external factors such as the

pleasure derived from appreciation from others, or by fear of punishment have extrinsic motivations (Li, 2001).

Harter (1981) contends that the type of motivation, intrinsic or extrinsic, is an essential factor for determining whether learners will be continually striving to achieve perfection. Intrinsically motivated learners pursue satisfying and pleasant activities. Throughout the learning process, they actively participate and precisely evaluate their own situations before being assessed by instructors. Intrinsic learners have a strong sense of curiosity, enjoy challenging tasks, and are more willing to independently solve problems than extrinsically motivated learners. Extrinsically motivated learners however are focused on substantial rewards and prizes as the primary purpose behind their actions, and thus their enthusiasm for learning waxes and wanes as these rewards are increased or reduced.

## 2.3 Research model and Hypotheses

### 2.3.1 TAM

In 1975, Fishbein and Ajzen developed a well-supported behavioral theory called Theory of Reasoned Action (TRA) that describes the psychological determinants of behaviors, as shown in Figure 2.2 (Fishbein, 1980; Fishbein & Ajzen, 1975, 1977). According to TRA, the immediate determinant of a person's behavior is his intention to perform the behavior. The person's behavioral intention is in turn said to be determined by his attitude concerning the behavior and his subjective norm concerning the behavior.

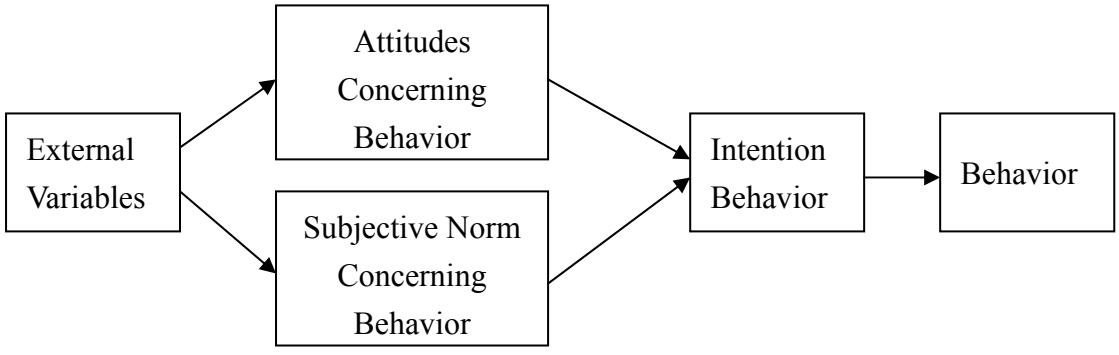



Figure 2.2 Fishbein and Ajzen's Theory of Reasoned Action

Davis (1986; 1989; 1993) proposed the Technology Acceptance Model (TAM) to investigate the impact of technology on user behavior. The model focuses on the process of using technology, where “Perceived Usefulness” and “Perceived Ease of Use” are the two key factors that affect an individual’s intention to use a technology. Perceived Usefulness means that the user believes the technology will improve his/her performance, while Perceived Ease of Use refers to the belief that using the technology will be free of effort (Davis, 1989). Venkatesh and Davis (1996) suggested that Perceived Usefulness and Perceived Ease of Use could be affected by external variables. For example, they found that computer self-efficacy is an important variable and assumed that a positive relationship exists between higher computer self-efficacy on the one hand and Perceived Usefulness and Perceived Ease of Use on the other. The studies of Venkatesh (2001) confirmed the hypotheses about positive causal relationships posited in previous research.

Since Davis proposed TAM, several approaches that focus on the degree of technological acceptance have been based on the model (Adams, Nelson & Todd, 1992; Igbaria, Guimaraes & Davis, 1995; Mathieson, 1991). However, TAM only provides general information about whether a technology has been adopted by users. Further information is needed regarding its use in specific fields, so that the development of technology can be guided in the right direction (Mathieson, 1991).

With the development of Information Communication Technology, online learning is becoming an increasingly important learning trend. A growing number of e-learning systems and online courses are being applied by teachers in order to encourage students to extend their learning after class. We have found that, in recent years, a number of studies on education have used TAM to examine learners' willingness to accept *e-learning systems* (Lee, Cheung, & Chen, 2005; Liaw, 2007; Ngai, Poon, & Chan, 2007; Ong, Lai, & Wang, 2004; Pan et al., 2005; Pituch & Lee, 2006; Raaij & Schepers, 2006; Yi & Hwang, 2003) or *online courses* (Arbaugh, 2002; Arbaugh & Duray, 2002; Gao, 2005; Landry, Griffeth, & Hartman, 2006; Selim, 2003). Overall, *e-learning systems* have more abundant and diverse contents than *online courses*. However, few studies have used TAM to examine the concept of online learning communities. Based on TAM, as well as the extension and modification of the model in accordance with related literature, we propose a new conceptual model that can predict learners' intentions to use an online learning community. The model includes external variables, perceived variables, and outcome variables.

## 2.4 External variables

Perceived Usefulness and Perceived Ease of Use could be affected by the external variables considered in the original TAM model. In this paper, we explore which external variables directly or indirectly affect learners' intentions to use an online learning community. Conceptually, an online learning community is a microcosm of the virtual community. Boczkowsk (1999) defined a virtual community formed through interaction as *a group of people pursuing common interests on the Internet* (Dennis, 1998; Foreman, 1999). By linking networks, people from different backgrounds can study and discuss topics in a specific domain, and also share knowledge with each other; hence they form an online learning community (Heckscher & Donnellon, 1994). In our model, an online learning community is composed of human elements and system elements. The former refers to the users of the online learning community, including learners and instructors; and the latter refers to computers connected to the Internet and used for learning activities, including online courses and online learning systems.

From a human perspective, how a learner feels about using an online learning community is our major concern in this study. The learner's previous learning experience with computers and networks has a tremendous influence on participation

in an online learning curriculum (Reed & Geissler, 1995; Reed et al., 2000). Therefore, we take Previous Online Learning Experience as one of our external variables and discuss whether there it affects the other factors related to the use of an online learning community.

Furthermore, it is widely recognized that, for students, the design of an online course is the most important determinant of learning effectiveness (Fink, 2003). In our opinion, the same holds true from the system's viewpoint. Therefore, it is crucial that instructors adopt the proper pedagogical strategy and technology when designing an online learning course. From another perspective, a good interface design helps users resolve technical problems that may arise when using a system (Metros & Hedberg, 2002). The interface design will not facilitate better learning outcomes if it is not comprehensive or it does not meet users' needs (Wang & Yang, 2005).

Based on the above observations, the proposed model considers the influence of the following three external variables of Intention to Use an Online Learning Community: Online Course Design, User-interface Design, and Previous Online Learning Experience. We explain the variables in detail and propose our hypotheses in the following sub-sections.

### 2.4.1 Online Course Design

In general, the traditional learning method is paper-based, whereas the online learning medium is Web-based; therefore, the type of content will play an important role for learners in the design of an online course. McGiven (1994) observed that Online Course Design is a key factor in determining the success or failure of online learning. From the backward design model's viewpoint, the online course designer should consider whether learners will be prepared to continue using the platform for learning activities after they finish the current course (Wiggins, 1998). The implication is that the quality of Online Course Design affects learners' perceptions about the ease of use and usefulness of such courses. In addition, Middleton (1997) suggested that other factors affect the learner's perception of online learning, e.g., feelings of isolation and limited access to materials. Berge (1999) suggested that Online Course Design should be considered from the viewpoint of interaction between peers and instructors. Rovai (2004) also pointed out that the requirements of learners should be considered when designing an online curriculum.

The central theme of the above studies is that the design of an online course directly or indirectly affects learning efficiency. Therefore, in this research, we discuss the relationship between Online Course Design and Perceived Usefulness, Perceived Ease of Use, and Perceived Interaction individually. This leads to the following

hypotheses:

**H1.** Online Course Design will positively affect the Perceived Usefulness of an online learning program.

**H2.** Online Course Design will positively affect Perceived Ease of Use of an online learning program.

**H3.** Online Course Design will positively affect Perceived Interaction with an online learning community.

In this study, IWill plays a role of LMS (Learning Management System) offering high school English teachers a platform for online courses. Usually, high school teachers have face-to-face interaction with students by the means of traditional classroom teaching. After class, location of learning has expanded from physical space to cyberspace. Some of IWill teachers completed their teaching courses through blended learning, traditional classroom and online courses.

Therefore, in this research, meaning of online courses is that teachers who participate in IWill community use IWill platform to extend teaching and learning outside of the class. Also, Online Course Design focuses on the programs that teachers design to support physical teaching activities, including syllabuses, self-learning materials, supplementary materials, multimedia files and so forth for

students to download and study after class. Meanwhile, teachers and students can discuss issues related to English learning through Discussion Board.

### 2.4.2 User-interface Design

The quality of the User-interface Design is a critical factor when developing information software. User-centered design is another important factor that should be considered (McKnight et al., 1996). A well-designed user interface can help users operate a system more easily and reduce their cognitive load (Jones et al., 1995; Martin-Michiellot & Mendelsohn, 2000). From the viewpoint of Gestalt theory, Leflore (2000) proposed some guidelines for the design of a user interface for online instruction. He suggested that information should be arranged and integrated with good figures and clear text so that it is easy for students to read and use. Moreover, even a simple logo can clearly express a message. When we develop a Web-based learning system, a user-friendly interface design would help users derive more benefits (Najjar, 1996; Evans & Edwards, 1999). Liu et al. (2006) also noted that an interactive interface design should quickly guide users to the correct way of learning. Wang & Yang (2005) suggested that the following five principles of user-centered design should be used to develop a user interface that can promote more interaction between learners and the system. The principles are (1) make the most important information distinct, (2) establish a visual order of importance for the user, (3) organize information so that learners can see the “big” picture, (4) consistent button

design, and (5) visual feedback. These design principles have been adopted by a number of researchers and organizations (IBM, 2004; Lohr, et al., 2007). When we were developing the proposed system platform, we invited several instructors and learners to participate in the project. Based on their feedback, we have designed a set of authoring tools for instructors, so that they can design various types of online learning curricula through the platform. The principles we followed for user-interface design make the system easier to use and more interactive. Thus, we put forward the following hypotheses:

**H4.** User-interface Design will positively affect the Perceived Ease of Use of an online learning community.

**H5.** User-interface Design will positively affect Perceived Interaction with an online learning community.

### 2.4.3 Previous Online Learning Experience

Before discussing Previous Online Learning Experience, we should consider a user's previous learning experience with information and communication technologies (ICT). Users may feel uncomfortable with computer assisted learning if they lack experience in using a computer (Reed & Geissler, 1995). Research has shown that Previous Online Learning Experience can affect learners' perceptions of a new online curriculum (Cereijo et al., 1999; Hartley & Bendixen, 2001). Song et al. (2004) also noted that learners' previous experience in using information technology will affect the usefulness of future online learning activities. Before participating in online learning, learners may perceive that a new system is easy to use if they have detailed operating experience of the new IT (Adams et al., 1992; Straub, Keil, & Brenner, 1997) and therefore spend relatively less time exploring the new system. In addition, more satisfying experiences sometimes lead to better learning performance in the future (Shih, Muroz, & Sanchez, 2006). The implication is that such a learning style has Perceived Usefulness for learners. Arbaugh and Duray (2002) found that students feel more satisfied with related online learning activities and are willing to reuse them if they have had Previous Online Learning Experience. Thus, we propose the following hypotheses:

**H6.** Previous Online Learning Experience will positively affect the Perceived Usefulness of an online learning program.

**H7.** Previous Online Learning Experience will positively affect the Perceived Ease of Use of an online learning program.

**H8.** Previous Online Learning Experience will positively affect the Intention to Use an Online Learning Community.

## 2.5 Perceived Variables

Perceived Usefulness and Perceived Ease of Use are two variables in the TAM model used to explore the adoption of technology (Davis, Bagozzi, & Warshaw, 1989; Davis, 1986, 1989, 1993). Perceived variable is a kind of psychological sense. In a great number of researches about extended TAM model, perceived variable is mainly used to measure the perception and belief created when a user adopts some kind of technology. For examples: *Perceived enjoyment* (Lee, Cheung, & Chen, 2005; Teo, Lim, & Lai, 1999; Igbaria, Iivari, & Maragahh, 1995; Yu et al., 2005; Hwang & Kim, 2007), *perceived playfulness* (Venkatesh & Davis, 2000; Moon & Kim, 2001; Lin, Wu, & Tsai, 2005; Tao, Cheng, & Sun, 2009; Roca & Gagne, 2008), *perceived interactivity* (Cyr, Head, & Ivanov, 2009; McMillan & Hwang, 2002). In Cyr et al. (2009)'s paper, the goal of the investigation is to examine perceived interactivity in a proposed model which explores usages of different web-poll interfaces. In McMillan & Hwang (2002)'s research, it validated a measure of perceived interactivity, offering researchers a tool for measuring consumer perception. The developed Measures of Perceived Interactivity for a web-based interactivity investigation focused on a user's perception. The concept of perceived interaction was proposed by Newhagen, Cods, & Levy (1995). It indicates a psychological sense in the interaction between message

senders and receivers. And the concept of perceived interaction is primarily based on efficacy. This concept focuses on describing the relationship between a reader's psychological sense toward efficacy and an audience's perceived interaction toward media system. In addition, Wu (1999) defines perceived interaction as two types of concepts: User's browsing behavior and system response. He further examined two e-cards websites, discovering that there was a positive relation between users' perceived interaction and his/her evaluation toward the website.

In this study, we include a third variable, Perceived Interaction, in our proposed model and examine its relationship with and impact on each of the other variables, and whether or not it affects the Intention to Use an Online Learning Community.

### 2.5.1 Perceived Ease of Use and Perceived Usefulness

In TAM, the behavioral intentions of users regarding technology are affected by two variables: Perceived Ease of Use and Perceived Usefulness. The former affects the latter, which means that if users feel the system is easy to use, they will feel that online learning is useful and they will be prepared to use the technology. The causal relationship that exists between these two variables has been confirmed by a number of empirical studies (e.g., Davis, 1989, 1993; Venkatesh & Davis, 1996). The Technology Acceptance Model proposed by Davis predicts whether users will adopt a

general purpose technology, without focusing on a specific topic (Pituch & Lee, 2006). In contrast, the current study extends TAM by focusing on specific topics and exploring the Intention to Use an Online Learning Community. Moreover, certain parts of Davis and Wiedenbeck's (2001) proposed model, consider the relationship between Perceived Ease of Use and Interaction. In their empirical study, they define several kinds of interaction styles and demonstrate that the two factors have a statistically significant relationship. Therefore, we also examine the relationship between both factors in the proposed model.

### 2.5.2 Perceived Interaction

ICT-supported learning in education has been popular for a long time, and the electronic media have improved in parallel with the development of technology. Initially, audio, video, and CD-ROM teaching aids were used as the main online tuition methods, but they have gradually been replaced by Web-based systems. Viewed from the level of interaction, the process has evolved from one-way human-system interaction to two-way instructor-learner interaction. The participants enhance the communication of knowledge and sharing by interaction with others in the online learning community. It has been suggested that knowledge is created through a series of processes whereby individuals interact with each other to share, recreate, and amplify knowledge (Nonaka & Nishiguchi, 2001). If learners are willing to increase interaction with their instructors or peers, they will build on their knowledge construction and have the opportunity to get to know each other. Such interaction also affects the behavioral intention to use e-learning (Liaw et at., 2007). Moreover, Cantoni et al. (2004) stressed that interaction between learners could be improved by using games, quizzes, chat rooms, discussion boards, instant messenger and email during online learning.

In this study, Perceived Interaction is defined as follows. When learners join an online learning community, they perceive two types of interaction: human-system

interaction and interpersonal interaction. The former derives from the operating environment of the online course; and the latter is the result of interaction with peers and instructors. We focus on the characteristics of online learning, and try to develop an online learning community from the perspective of the two types of interaction. Thus, we put forward the following hypotheses:

**H9.** Perceived Ease of Use will positively affect the Perceived Usefulness of an online learning program.

**H10.** Perceived Ease of Use will positively affect the Perceived Interaction with an online learning program.

**H11.** Perceived Usefulness will positively affect the Intention to Use an Online Learning Community.

**H12.** Perceived Ease of Use will positively affect the Intention to Use an Online Learning Community.

**H13.** Perceived Interaction will positively affect the Intention to Use an Online Learning Community.

## 2.6 Outcome Variables

There are two outcome variables in the original TAM, namely Intention Behavior and System Use. The model tries to predict the behavioral intentions of users, i.e., predict whether they will adopt a particular information technology. However, we would like to know whether users are willing to adopt an online learning community. Therefore, we incorporate Intention to Use an Online Learning Community as an extra outcome variable in our research model.

## 2.7 Summary

Based on the above theoretical variables, we present our research model and discuss the relationships between all the factors that influence an online learning community. The proposed model is illustrated in Figure 2.3.

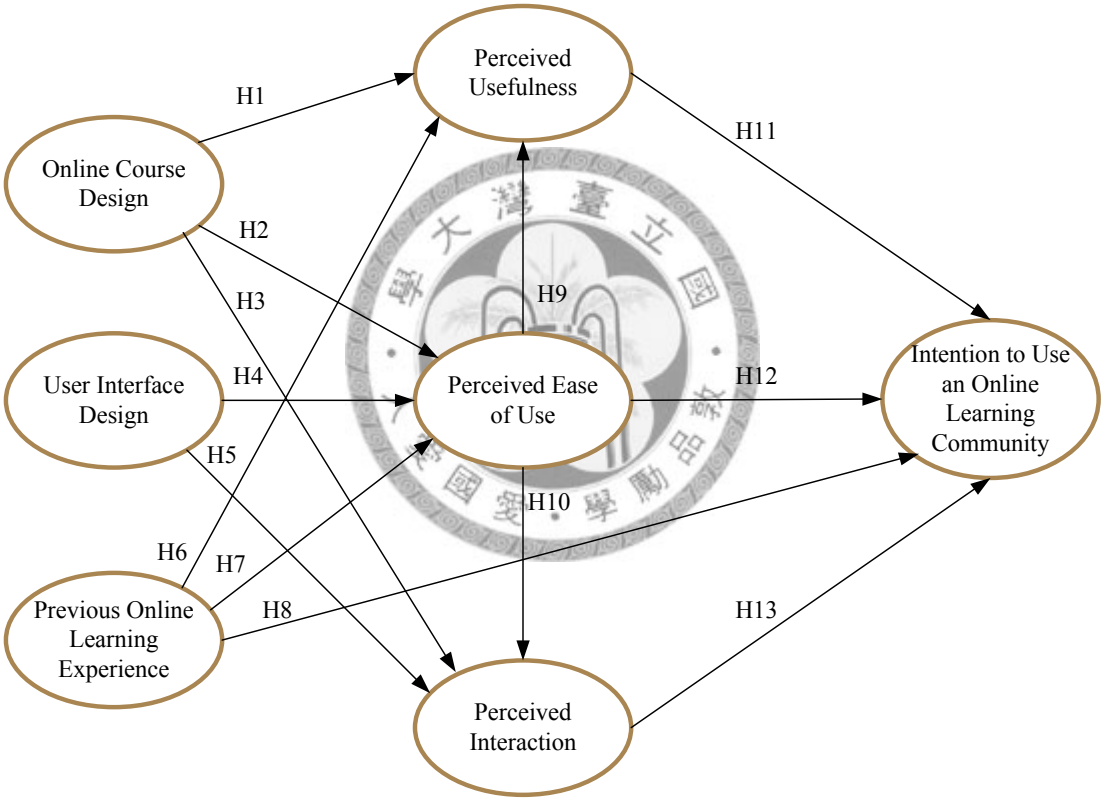



Figure 2.3 The proposed research model

# Chapter 3: The Design of an Online Learning Community

## 3.1 IWiLL

In Taiwan, English learning has become essential because of the need to connect with the international community. High school students must reach a certain level of English proficiency before going to college. In recent years, the government has promoted the General English Proficiency Test (GEPT) to assess students' English skills. All students are encouraged to take the test because it provides a fair assessment of their English proficiency level.

Intelligent Web-based Interactive Language Learning (IWiLL, http://www.iwillnow.org) is a Taiwanese online learning community for people who wish to learn a foreign language. The community was established in 2000 and continually renews the system's functions, online curricula, and relevant learning activities (Wible, 2004). Sponsored by the Ministry of Education and the National Science Council of Taiwan, IWiLL is now used in over 200 senior high schools, and has about 100,000 students, 2,000 teachers, and 15,000 end-users throughout the country. In addition, a nationwide English reading contest, called Reading Club, is held every year and usually attracts thousands of students. The IWiLL platform is

being developed towards UWiLL (Ubiquitous Web-based Interactive Language Learning), which will allow users to learn English in a ubiquitous environment. Next, we introduce the important elements and functions of IWiLL. The framework is illustrated in Figure 3.1.

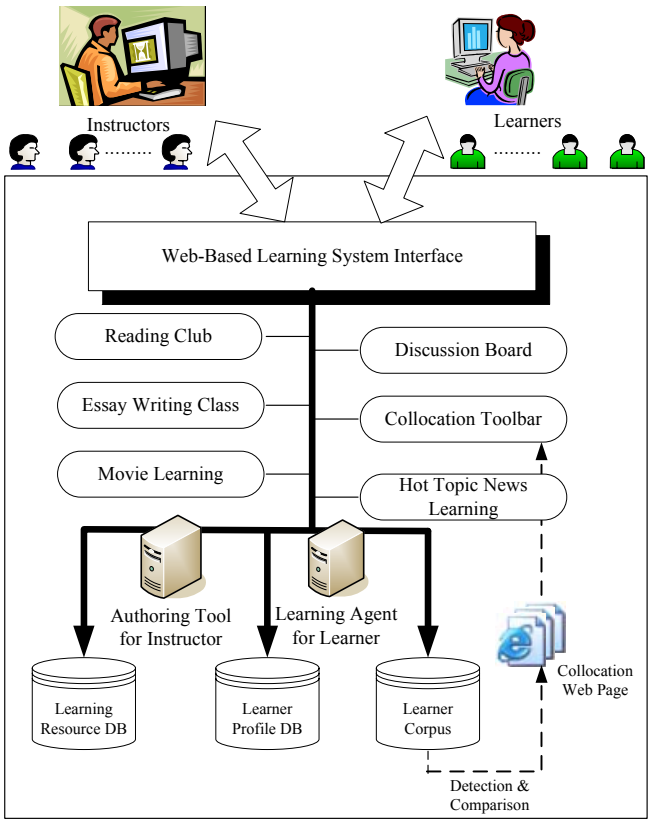



Figure 3.1 Framework of the IWiLL online learning community

(1) Learner

This is a learner-centered design that emphasizes interaction with peers and instructors through the platform.

(2) Instructor

IWiLL instructors are teachers in senior high schools nationwide.

(3) Essay writing class

An interactive online writing curriculum is provided, and students are taught to write in English through some teaching guides. The instructors edit and grade the essays online and provide feedback to the learners.

(4) Movie learning

Teachers can select dozens of classical films and let students learn English by watching them and studying the content, vocabulary, and phrases used in the dialogue. If students want to know how a word or phrase in the dialogue of a film should be used, they can conduct a keyword search to find the corresponding segment of the film.

(5) Learning through hot news

IWiLL English teachers are always available to guide students in their learning activities, and inspire learners through interactive discussion of hot news. For example, the teacher may say: “We all know that Chien-Ming Wang is considered one of the best pitchers in the Major League, but do you know his best pitch?”

(6) Discussion board

This is an authoring tool that allows a teacher to insert dedicated discussion boards anywhere in the lesson flow. These are also spaces for learners to discuss English learning with each other, and learners can post problems they encounter on the

discussion board to share with their peers. Teachers will also help learners find solutions to the problems.

(7) Authoring tools for instructors and the learning resource database

IWiLL provides a series of advanced authoring tools for instructors to edit and produce online English teaching materials that meet learners' needs. After the materials have been edited, they are stored in the learning resource database so that other teachers can use them.

(8) Learner profile database

This database contains the personal profile and learning portfolio of each learner.

(9) Collocation toolbar and learner corpus

When learning English as a foreign language, beginners often make collocation mistakes. A collocation is composed of two words. For example, "take medicine" is a collocation, and "buy medicine" is a free combination (Wible et al., 2006). A ubiquitous mechanism, called a *collocator*, is provided to help users with this problem. When users randomly browse a webpage, the collocator automatically detects whether there are any collocations appear in the article. If any collocations are found, the system will highlight them for the user and compare them with the learner corpus to detect corresponding collocations.

## 3.2 Reading Challenge

In this section, we will describe the details of Reading Challenge and the difference between other contests.

### 3.2.1 Introduction of Reading Challenge contest

IWiLL regularly holds a nationwide English reading contest – *Reading Challenge*. It has been held since 2000, and thousands of high school students have participated in this contest. The details of the contest are described as follows:

(1) Purpose

The purpose of the contest is to test the English reading comprehension of students from the online learning community.

(2) Goals

a. To introduce excellent English books in order to cultivate students' interest in reading.

b. To promote the habit of reading and strengthen the motivations of students to learn.

c. To improve the English reading proficiency of students and enrich their understanding of a different culture.

(3) Activity Period

Every year, this contest starts from the beginning of summer break to the end.

(4) Participants

People who would participate in the *Reading Challenge* contest must first join the IWiLL online learning community as an online member.

(5) Rules

a. Participants should select any novels from the *Reading Challenge* lists, including six books for beginners, three for basic level, intermediate level, and advanced level, respectively.

b. Participants must add in the books they choose to personal bookcases before starting the challenge activity.

c. After reading every novel, participants start to answer 20 questions at most in a comprehension test. The test time is 15 minutes. Participants can leave during the process of the test. The computer will automatically store the answers and progress. When they return to the test, they will begin from the next question. Time will continue to be calculated until 15 minutes has expired. (The Beginner reading has 20 questions at most and the examination time is 10 minutes.)

d. In order to pass the comprehensive test, participants must score 80 points or higher. Furthermore, participants may retake the test as many times as necessary in order to pass.

e. While participating in the contest, participants will have access to discussion boards

through which they can interact with other participants. The numbers of articles and discussion posts made by participants on the website during the contest will affect each participant's final score.

The contest style of IWiLL has changed since the 13th *Reading Challenge* in 2009. From the online learning environment perspective, members own their individual learning blog, My Cube, allowing the rest of the internet to know what they think and what they learn. Additionally, participants join the Reading Club they like for more discussion and interaction. My Cube also allows users to add friends in their lists for knowledge and ideas sharing. Furthermore, participants in the Reading Club can read other members' comments on books to understand more about them. They can also run learning blog My Cube to establish personal sharing spaces and present their ideas on the reading. Lastly, members can share their own learning experiences and further encourage others to earn rewards and prizes.

### 3.2.2 The difference between Reading Challenge and other contests

The main purpose of Reading Challenge held by IWiLL online learning community is to improve high school students' English reading capacity by promoting excellent English books. The difference between characteristic of *Reading Challenge* contest and other related English reading activities are listed as follows:

(1) Scale of activity

Different from common regional reading contest, *Reading Challenge* is directed by the Ministry of Education, coordinated by DLLA-Digital Language Learning Association, cooperated by Center for Digital Language Research of TKU, Institute of Information Science of SINICA, and Graduate Institute of Learning and Instruction of NCU. *Reading Challenge* integrated the resource of government, academic organizations and research authorities, developing an open and fair platform of competition. There are thousands of high school students registered this contest every year for it is a benchmark of national large-scale English reading challenge.

(2) Based on online learning community

Usually when an English reading contest is finished, nothing follows. However, *Reading Challenge* is a contest based on an online English learning community.

A student who would like to participate in this national English reading contest must join IWiLL online learning community as a member first, then he/she could sing up for *Reading Challenge*. Before the contest, all of related information will be posted on IWiLL website. During the contest, participants could online discuss related issues about English books provided by IWiLL online learning community. After the contest is finished, participants could access *My Cube* blog and express how they felt about the contest. By this, the community coherence will be strengthened with expectation of more online members to take part in the contest in the future.

(3) Active choice of English novels

For common English reading contests, the reading material is usually designated by the main coordinating organization. But for *Reading Challenge*, the participants could choose more than one novels from a list given by *Reading Challenge*. From this, the participants would have more options of books to read.

(4) Credits accumulation

For common English reading contest, it will be processed in one day and participants will be informed of their results on the same day when contest is finished. However, *Reading challenge* last for 8 weeks. During the period, participants could accumulate credits by positively taking part in the learning

activities designed by IWiLL online learning community. They will be rewarded with prizes according to their credits after the contest is finished. Therefore, *Reading Challenge* is used to understand a participants' reading comprehension through their long-term learning performance instead of a simple result from one single reading article.

(5) Online Discussion and interaction

General English reading test is proceeded by paper-formed. Participants won't be able to discuss with each other. In the *Reading Challenge*, participants not only have 8-week long to interact and discuss with others, they could also discuss the current popular English novels by joining the *Reading Club* and share their stories with all of online members in *My Cube* blog.

(6) A variety of awards

To offer participants have more opportunities of winning, *Reading Challenge* is designed to encourage students to take part in the contest with a variety of awards. The items of awards are as follows:

a. Reading Accomplishment

When the participant passes a reading comprehension test (over 80 points) with any one of book he chose, he would receive a silver medal in his Cube. If he expresses comments particularly on the book, and receives more than

3 feedbacks, recommended by two people, then he could get one Gold medal. Ranking results, at the same time, will be listed on the webpage of IWiLL and in the *Reading Club*.

b. Joy of Reading – Beginner

When a student finishes 5 books for beginners and passes reading comprehension (to reach 80 points), he will be awarded with Beginner certificate, and one IWiLL prize, which are given in a public awards ceremony.

c. Gold Award of Joy of Reading

When a student finishes 8 books for beginners, intermediate level and advanced level, and then passes reading comprehension (to reach 80 points), he will be awarded with a certificate for Gold Award of Joy of Reading, and one IWiLL prize, which are given in a public awards ceremony.

d. Silver Award of Joy of Reading

When a student finishes 5 books for beginners, intermediate level and advanced level, and then passes reading comprehension (to reach 80 points), he will be awarded with a certificate for Silver Award of Joy of Reading, and one IWiLL prize, which are given in a public awards ceremony.

e. Award of Outstanding Cube

When a student posts his article, or his thoughts about the book in the Cube, receiving a great number of viewers, feedbacks and responses or when he replies his feedback, submits a question or gives others credits in others' Cube, all of these interaction will recoded as a figure. The articles and feedbacks will also be further evaluated by an instructor to select the winner of this award. The winner will receive a certificate of Outstanding Cube and a prize of IWiLL in a public awards ceremony.

f. Award of Learning Expert

All of winners of Joy of Reading - Beginner, Gold Award of Joy of Reading, Silver Award of Joy of Reading, and Award of Outstanding Cube will be further evaluated to be the final winner of Learning Expert, who is going to receive a certificate of Learning Expert, 1000NT coupon and a prize of IWiLL in a public awards ceremony.

(7) Offline reading and online discussing

*Reading challenge* is done not only by offline reading but also online discussing. That's why it is so special and the reason we chose *Reading Challenge* as our case study.

## 3.3 Summary

For high school students in Taiwan, the second language acquisition is based on English. The reason school teachers do not emphasize on extensive reading is that students are often under tremendous pressure to pass the exams and obtain the admission to university. Unlike traditional teaching offering exam-passing skills, extensive reading can't directly help students obtain high scores. Courses at school are very intensive so that students hardly have spare time to read out of their interest. Therefore, we designed *Reading Challenge* as a platform for teachers to encourage students to do extensive reading after school.

Taiwan is a country where admission exam is highly emphasized. Most of high school students must pass the exams for qualification to enter university. As a result, a weird phenomenon is created. Students, to obtain high scores, will only pay close attention to every vocabulary and correctness of grammar, ignoring the whole point of article. Comparatively, when a student reads an interesting book, he/she would focus on the message from the story. Even when the student bumps into vocabulary that he/she doesn't know, he/she tends to study the words in an attempt to understand whole point of story, instead of memorizing the words deliberately.

IWiLL, an online learning community, aims to encourage students to do extensive

reading when learning English. We expect that English learning is not just learning the language subject, but also the cultures that get expressed, described. And most importantly, hopefully high school students would fully enjoy the language learning by using IWiLL.

# Chapter 4: Research Methods

## 4.1 Instruments

When developing the instrument for this research, some items of the constructs (Perceived Usefulness, Perceived Ease of Use, and Intention to Use) were adapted from previously validated instruments for use in our online learning community context (Ajzen & Fishbein, 1980; Davis, 1989, 1993; Venkatesh, 2001; Venkatesh & Davis, 1996). The items of the remaining constructs (Online Course Design, User -interface Design, Previous Online Learning Experience, and Perceived Interaction) were developed by experts who were part of the research team. A five-point Likert-type scale ranging from (1) “strongly disagree” to (5) “strongly agree” was used to answer the questions in the seven constructs of the questionnaire. Since some items were developed by us and some were adapted from previous studies, a pretest was required. We asked 178 high school students listed on the collected from IWill website to complete the preliminary questionnaire of 26 items. By measuring the scale’s reliability based on the value of Cronbach’s alpha, which ranged from 0.90 to 0.92, we found that the questionnaire was reliable in the pretest. Then, we were able to provide the formal questionnaire to our subjects, and analyze the responses

statistically.

## 4.2 Subjects

We placed the questionnaire on the IWiLL website for two weeks. Only students who had an IWiLL account number and had definitely used the IWiLL online learning community could log into complete the questionnaire. The participants were senior high school students from all over Taiwan. A total of 492 students completed the questionnaire, and 436 of the responses were valid (a valid response rate of 88.6%). The gender split was 205 male and 231 female students. Among them, 183 students were from northern Taiwan, 152 were from central Taiwan and 101 were from southern Taiwan. Their average age was 18.

## 4.3 SEM

Structural equation modeling (SEM) is a statistical approach for examining the causal relationships and testing the hypotheses between the observed and latent variables in a research model (Hoyle, 1995). In this study, we propose an extended version of TAM based on the related literature in order to examine an online learning community research model. Thus, we use SEM to analyze the data by two procedures, as shown in Figure 4.1.

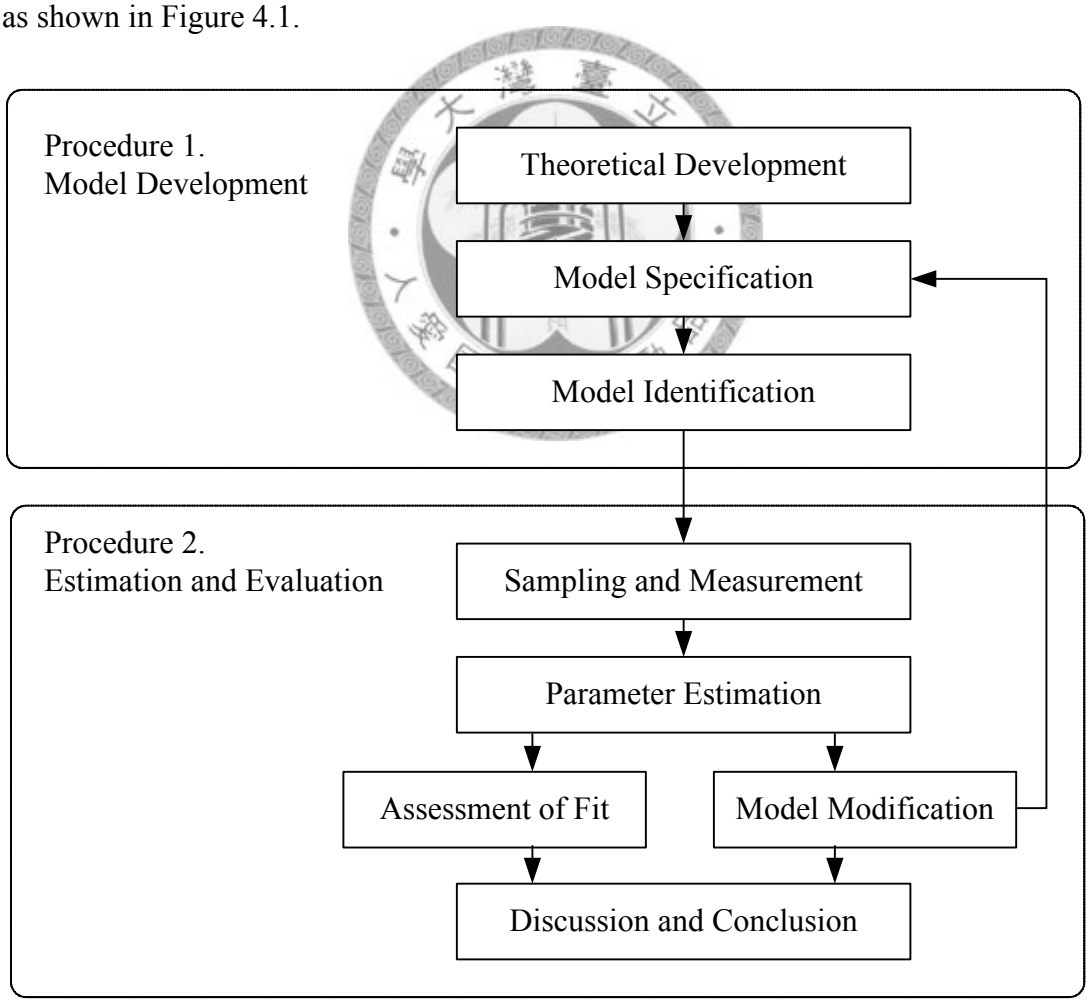



Figure 4.1 The basic procedures of SEM analysis

**Procedure 1. Model Development**

In the Model Development stage, we construct a hypothesized model and analyze it with SEM.

- Step 1. Theoretical Development

Because the SEM model is based on theories, we must consider the development of related theories, the induction of our research hypothesis, as well as a process of the theoretical justification and interpretation to propose a hypothesized model.

- Step 2. Model Specification

Model Specification is the most specific step in Procedure 1. The purpose is to develop specific variables from theories by using SEM to examine and estimate the parameters.

- Step 3. Model Identification

When developing a model, researchers must clearly identify two types of variables, namely, exogenous and endogenous variables. Exogenous variables play the role of independent variables, whereas endogenous variables play the role of dependent variables. This means that the endogenous variables are predicted by the exogenous variables. We list the variables below (see Table 4.1).

Table 4.1 The independent variables and dependent variables in our model

| | Independent variable | Dependent variable |
|---|---|---|
| H1 | Online Course Design | Perceived Usefulness |
| H2 | Online Course Design | Perceived Ease of Use |
| H3 | Online Course Design | Perceived Interaction |
| H4 | User Interface Design | Perceived Ease of Use |
| H5 | User Interface Design | Perceived Interaction |
| H6 | Previous Online Learning Experience | Perceived Usefulness |
| H7 | Previous Online Learning Experience | Perceived Ease of Use |
| H8 | Previous Online Learning Experience | Intention to Use an Online Learning Community |
| H9 | Perceived Ease of Use | Perceived Usefulness |
| H10 | Perceived Ease of Use | Perceived Interaction |
| H11 | Perceived Usefulness | Intention to Use an Online Learning Community |
| H12 | Previous Online Learning Experience | Intention to Use an Online Learning Community |
| H13 | Perceived Interaction | Intention to Use an Online Learning Community |

**Procedure 2. Estimation and Evaluation**

After developing the SEM model, researchers must collect data to measure the model and determine whether the observed data matches the model.

- Step 4. Sampling and Measurement

This stage begins with the collection of samples and measurements. After processing the observed data, we follow SEM analysis methods to further estimate a series of parameters. We also use statistical software, such as SPSS and LISREL, to

evaluate the reliability, validity, and correlation coefficient matrix, and test if the hypotheses between the variables are supported.

- Step 5. Parameter Estimation

Because maximum likelihood estimation is set as default in LISREL software, we adopt this widely used method to estimate the parameters.

- Step 6. Assessment of Fit

As criteria for the model's evaluation, we adopted the following indices recommended by Hoyle & Panter (1995):

(1) $\chi^2$ /d.f; (2) Goodness-of-fit index (GFI); (3) Adjusted GFI (AGFI); (4) Normed fit index (NNFI); (5) Non-normed fit index (NNFI); (6) Relative fit index (RFI); (7) Incremental fix index (IFI); (8) Root mean square residual (RMR); (9) Root mean square error of approximation (RMSEA); and (10) Critical N.

- Step 7. Model Modification

When the model is tested by SEM, if the results are rejected by the data, i.e., the model is not a good fit, it is important to find the problematic causal relationships and improve the model. If the model requires modification, we need to return to step 2 for model respecification. We also made some modifications so that the entire model presents a good fit and strong stability.

- Setp 8. Discussion and Conclusion

Based on the results of data analysis, we validate the proposed research model and hypotheses. Finally, we identify the phenomena that derive from the causal relationships in practice, and interpret their implications in the real world.

Overall, when we want to examine a research model, it is appropriate to use the SEM statistical method, which combines factor analysis and path analysis, to test the model's fit. Numerous TAM related empirical studies have adopted SEM to validate research model and hypotheses (e.g. Adams et al., 1992; Arbaugh, 2002; Arbaugh & Duray, 2002; Gao, 2005; Igbaria, Guimaraes, & Davis, 1995; Landry, Griffeth, & Hartman, 2006; Lee, Cheung, & Chen, 2005; Liaw, 2007; Liu, Chen, & Sun, 2006; Ngai, Poon, & Chan, 2007; Ong, Lai, & Wang, 2004; Pan et al., 2005; Pituch & Lee, 2006; Raaij & Schepers, 2006; Selim, 2003; Straub, keil, & Brenner, 1997; Venkatesh, 2001; Yi & Hwang, 2003).

The main advantage of SEM is that it can estimate a measurement and structure model, and achieve a good model fit after analysis and modification (Ngai, Poon, & Chan, 2007). In addition, SEM integrates factor analysis, principle components analysis, discriminant analysis, path analysis, and multiple regression from first-generation techniques as a comprehensive statistical approach. SEM also provides multiple criteria to measure a model's quality and estimate measurement errors.

To test the model of this research, SEM and LISREL 8.54 (Joreskog & Sorbom, 1993) software was used for validation. We adopt the maximum likelihood method to estimate the model's parameters. For the sample size, Boomsma (1987), suggested that if the maximum likelihood method is used to estimate the parameters, the smallest sample size should be higher than 200. However, he indicated that the sample size would have to be smaller than 100 to actually generate incorrect results and inferences. Thus, the sample of 436 students selected for this research was sufficient.

# Chapter 5: Data Analysis and Results

## 5.1 Data Analysis

Table 5.1 shows the results of exploratory factor analysis (EFA). Items 1 and 5 in the construct Previous Online Learning Experience were deleted because we found that they were not designed appropriately. The factor loadings of the individual items in the seven constructs are all above 0.5, as shown in Table 5.1. Moreover, there is no evidence of cross loading, which means the questionnaire was well designed. Initially, the questionnaire contained twenty-six items, but two items mentioned above were deleted through exploratory factor analysis (EFA), so that the model would be more stable. Thus, the final version of the questionnaire contained twenty-four items (see Appendix A).

Table 5.2 shows the value of Cronbach's alpha, the variance extracted from all the constructs, and the descriptive statistics of the mean and standard deviations of all the items in the questionnaire. According to Nunnally and Bernstein (1994), Cronbach's alpha is reliable if its value is at least 0.7. The average variance extracted, which is used to measure the discriminant validity of each construct, is only acceptable when it

is more than 0.5 (Fornell & Larcker, 1981). The value of Cronbach's alpha for the seven constructs in this research is more than 0.7, and is even between 0.8 and 0.9 in some cases. As the average variance extracted is generally more than 0.5, the reliability and validity of the questionnaire are both good.

Table 5.1 Exploratory factor analysis results

| | Factor | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Online Course Design (OCD) | | | | | | | |
| OCD1 | .334 | .254 | .260 | **.618** | .273 | .271 | .047 |
| OCD2 | .222 | .186 | .228 | **.657** | .282 | .177 | .314 |
| OCD3 | .363 | .172 | .320 | **.641** | .207 | .213 | .024 |
| OCD4 | .254 | .225 | .233 | **.748** | .166 | .192 | .141 |
| User Interface Design (UID) | | | | | | | |
| UID1 | .139 | .314 | .200 | .327 | **.651** | .113 | .227 |
| UID2 | .227 | .227 | .212 | .187 | **.797** | .147 | .108 |
| UID3 | .273 | .246 | .206 | .178 | **.749** | .136 | .120 |
| Previous Online Learning Experience (POLE) | | | | | | | |
| POLE2 | .079 | .195 | .060 | .309 | .086 | **.674** | .139 |
| POLE3 | .175 | .130 | .167 | .020 | .132 | **.826** | -.006 |
| POLE4 | .219 | .105 | .018 | .200 | .086 | **.653** | .260 |
| Perceived Usefulness (PU) | | | | | | | |
| PU1 | **.764** | .187 | .210 | .227 | .221 | .222 | .054 |
| PU2 | **.764** | .163 | .177 | .234 | .208 | .196 | .157 |
| PU3 | **.712** | .250 | .206 | .202 | .159 | .131 | .207 |
| PU4 | **.618** | .265 | .181 | .242 | .140 | .129 | .341 |
| Perceived Ease of Use (PEOU) | | | | | | | |
| PEOU1 | .301 | **.698** | .302 | .197 | .160 | .106 | .009 |
| PEOU2 | .219 | **.782** | .240 | .149 | .214 | .130 | .019 |
| PEOU3 | .096 | **.790** | .137 | .196 | .192 | .162 | .199 |
| PEOU4 | .207 | **.743** | .153 | .115 | .208 | .196 | .262 |
| Perceived Interaction (PI) | | | | | | | |
| PI1 | .284 | .218 | **.700** | .152 | .201 | .204 | .082 |
| PI2 | .213 | .262 | **.810** | .164 | .185 | .066 | .031 |
| PI3 | .091 | .133 | **.787** | .263 | .105 | .034 | .147 |
| PI4 | .233 | .286 | **.549** | .173 | .288 | .131 | .410 |
| Intention to Use an Online Learning Community (IUOLC) | | | | | | | |
| IUOLC1 | .405 | .200 | .217 | .182 | .255 | .293 | **.624** |
| IUOLC2 | .374 | .277 | .188 | .202 | .222 | .289 | **.633** |

Table 5.2 Descriptive statistics of the constructs and items

| | Mean | S. D. | Cronbach's alpha | Variance extracted |
|---|---|---|---|---|
| Online Course Design (OCD) | | | 0.90 | 0.7 |
| - OCD1 | 3.85 | 0.82 | | |
| - OCD2 | 3.88 | 0.84 | | |
| - OCD3 | 3.86 | 0.86 | | |
| - OCD4 | 3.91 | 0.83 | | |
| User Interface Design (UID) | | | 0.87 | 0.7 |
| - UID1 | 3.95 | 0.81 | | |
| - UID2 | 3.99 | 0.81 | | |
| - UID3 | 4.01 | 0.80 | | |
| Previous Online Learning Experience (POLE) | | | 0.71 | 0.5 |
| - POLE2 | 4.08 | 0.87 | | |
| - POLE3 | 4.18 | 0.74 | | |
| - POLE4 | 4.21 | 0.77 | | |
| Perceived Usefulness (PU) | | | 0.89 | 0.7 |
| - PU1 | 3.91 | 0.75 | | |
| - PU2 | 4.02 | 0.76 | | |
| - PU3 | 3.94 | 0.81 | | |
| - PU4 | 4.11 | 0.77 | | |
| Perceived Ease of Use (PEOU) | | | 0.89 | 0.7 |
| - PEOU1 | 3.83 | 0.84 | | |
| - PEOU2 | 3.82 | 0.85 | | |
| - PEOU3 | 3.92 | 0.81 | | |
| - PEOU4 | 3.98 | 0.84 | | |
| Perceived Interaction (PI) | | | 0.87 | 0.6 |
| - PI1 | 3.61 | 0.99 | | |
| - PI2 | 3.64 | 1.04 | | |
| - PI3 | 3.71 | 1.05 | | |
| - PI4 | 3.96 | 0.84 | | |
| Intention to Use an Online Learning Community (IUOLC) | | | 0.88 | 0.8 |
| - IUOLC1 | 4.16 | 0.80 | | |
| - IUOLC2 | 4.22 | 0.78 | | |

## 5.2 Results

### 5.2.1 Model testing criteria

Many indices can be used to evaluate the fit of a model, but no single index can serve as the only standard for judging the quality of a model (Schumacker & Lomax, 1996). We adopted the following indices recommended by Hoyle & Panter (1995) and Kelloway (1998), as the criteria for the model's evaluation:

(1) $\chi^2$/d.f. should be less than 3; (2) Goodness-of-fit index (GFI) should be more than 0.9; (3) Adjusted GFI (AGFI) should be more than 0.8; (4) Normed fit index (NNFI) should be more than 0.9; (5) Non-normed fit index (NNFI) should be more than 0.9; (6) Relative fit index (RFI) should be more than 0.9; (7)Incremental fix index (IFI) should be more than 0.9; (8) Root mean square residual (RMR) should be less than 0.05; (9) Root mean square error of approximation (RMSEA) should be less than 0.08; and (10) Critical N should be more than 200. In general, the closer the observed data is to the theoretical model, the better the fit of the model, and the easier it will be to satisfy the thresholds of the above indices. If the threshold of an index cannot be met, it means the model must be modified.

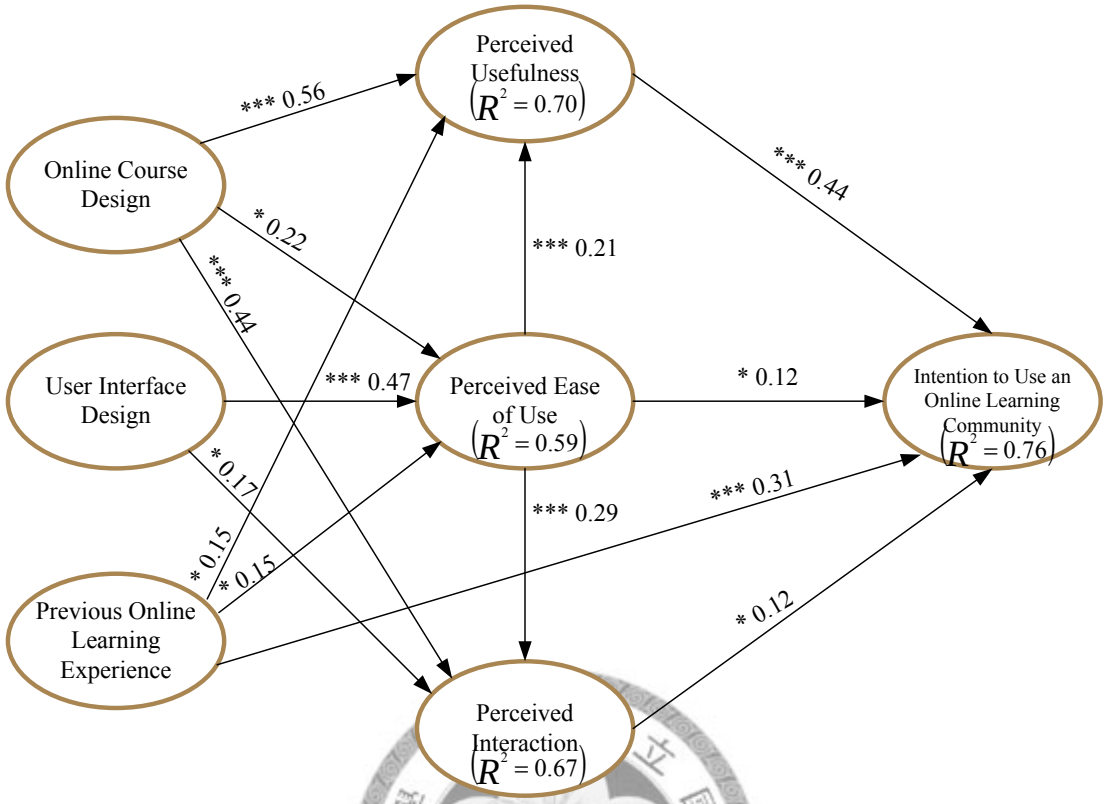
### 5.2.2 Model testing results

The results of SEM are summarized in Table 5.3. Like previous researchers, we made some modifications to fit the entire model, such that the actual values of the ten indices listed are above the thresholds of the recommended values. The entire model presents a good fit, which means the collected data matches the research model.

Table 5.3 Statistics of the model fit measures

| Model fit measure | Recommended value | Model value |
|---|---|---|
| 1. $\chi^2 / d.f.$ | < 3.0 | 2.42 |
| 2. Goodness-of-fit index (GFI) | > 0.9 | 0.90 |
| 3. Adjusted GFI (AGFI) | > 0.8 | 0.87 |
| 4. Normed fit index (NFI) | > 0.9 | 0.98 |
| 5. Non-normed fit index (NNFI) | > 0.9 | 0.99 |
| 6. Relative fit index (RFI) | > 0.9 | 0.98 |
| 7. Incremental fit index (IFI) | > 0.9 | 0.99 |
| 8. Root mean square residual (RMR) | < 0.05 | 0.03 |
| 9. Root mean square error of approximation (RMSEA) | < 0.08 | 0.05 |
| 10. Critical N | > 200 | 231.84 |

Figure 5.1 shows the causal relationship between the constructs and the standardized path coefficients, $R^2$. We applied a *t-test* to examine the statistical significance, and found that Online Course Design had a significant positive effect on Perceived Usefulness ($\beta = 0.56$, $P < 0.001$), Perceived Ease of Use ($\beta = 0.22$, $P < 0.05$), and Perceived Interaction ($\beta = 0.44$, $P < 0.001$). Hypotheses H1, H2, and H3 were therefore supported.




$* p < 0.05$ ; $** p < 0.01$ ; $*** p < 0.001$

Figure 5.1 The proposed model's test results

User-interface Design had a significant positive effect on Perceived Ease of Use ($\beta = 0.47$, $P < 0.001$) and Perceived Interaction ($\beta = 0.17$, $P < 0.05$); therefore, hypotheses H4 and H5 were supported. Previous Online Learning Experience had a significant positive effect on Perceived Usefulness ($\beta = 0.15$, $P < 0.05$), Perceived Ease of Use ($\beta = 0.15$, $P < 0.05$), and Intention to Use an Online Learning Community ($\beta = 0.31$, $P < 0.001$); therefore, hypotheses H6, H7, and H8 were supported. Perceived Ease of Use had a significant positive effect on Perceived Usefulness ($\beta = 0.21$, $P < 0.001$) and Perceived Interaction ($\beta = 0.29$, $P <$

0.001); therefore, hypotheses H9 and H10 were supported. In the following, the explained variances include Perceived Usefulness ($R^2$ = 0.70), Perceived Ease of Use ($R^2$ = 0.59), and Perceived Interaction ($R^2$ = 0.67).

Paths that affect the Intention to Use an Online Learning Community have an explained variance of 0.76. Apart from Previous Online Learning Experience, such paths include Perceived Usefulness ($\beta$ = 0.44, $P$ < 0.001), Perceived Ease of Use ($\beta$ = 0.12, $P$ < 0.05), and Perceived Interaction ($\beta$ = 0.12, $P$ < 0.05). Hence, hypotheses H11, H12, and H13 were also supported.

Table 5.4 shows the impact of each construct, including the direct, indirect and total effects. Intention to Use an Online Learning Community is an outcome variable used to determine whether users are willing to adopt an online learning community. The table shows that the determinant with the strongest direct impact on Intention to Use an Online Learning Community is Perceived Usefulness ($\beta$ = 0.44), followed by Previous Online Learning Experience ($\beta$ = 0.31). In other words, the more users feel that a system is useful, or they have a more complete online learning experience, the stronger will be the intention to use the online learning community continuously in the future. In terms of the total effect of Intention to Use an Online Learning Community, Perceived Usefulness has the strongest effect, followed by Previous Online Learning Experience and then Online Course Design. Moreover, Online

Course Design is the strongest indirect effect that influences Intention to Use an Online Learning Community ( $\beta$ = 0.35).

Table 5.4 The direct, indirect, and total effects of each construct

| | PU | | | PEOU | | | PI | | | IUOLC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Direct | Indirect | Total | Direct | Indirect | Total | Direct | Indirect | Total | Direct | Indirect | Total |
| OCD | 0.56 | 0.05 | 0.61 | 0.22 | - | 0.22 | 0.44 | 0.06 | 0.50 | - | 0.35 | 0.35 |
| UID | - | 0.10 | 0.10 | 0.47 | - | 0.47 | 0.17 | 0.14 | 0.31 | - | 0.14 | 0.14 |
| POLE | 0.15 | 0.03 | 0.18 | 0.15 | - | 0.15 | - | 0.04 | 0.04 | 0.31 | 0.10 | 0.41 |
| PU | | | | | | | | | | 0.44 | - | 0.44 |
| PEOU | 0.21 | - | 0.21 | | | | 0.29 | - | 0.29 | 0.12 | 0.13 | 0.25 |
| PI | | | | | | | | | | 0.12 | - | 0.12 |

# Chapter 6: Discussion

The goal of this research, which is based on the TAM model, is to add new variables, namely Online Course Design, User-interface Design, Previous Online Learning Experience, and Perceived Interaction, to the model and explore whether users are willing to adopt an online learning community. Our empirical study validates the proposed research model and hypotheses, and demonstrates that the hypotheses can be supported. Finally, we identify the phenomena that derive from the causal relationships in practice, and consider their implications.

Online Course Design is the most significant determinant that directly affects Perceived Usefulness. When users get greater satisfaction with an online curriculum (e.g., it is interesting, diverse, not too hard, and meets the needs of users at different levels), the stronger their feelings about its Perceived Usefulness will be. In terms of User-interface Design, our findings confirm those of other researchers (e.g., McGiven, 1994; Rovai, 2003) that User-interface Design is the most important determinant that affects Perceived Ease of Use. When the system design is developed in a more user-friendly form, users will feel more comfortable and find the system easier to use. This conclusion corresponds with a number of prior studies (e.g., Jones et al., 1995;

Martin-Michiellot & Mendelsohn, 2000). Furthermore, Online Course Design is the main determinant that affects Perceived Interaction. This indicates that when some interactive elements are added to an online course (e.g., a discussion room, chat room, message board, instant messenger, and email), users will be able to use these communication channels to engage in an interactive learning environment; thus, their Perceived Interaction with others will be strengthened.

With regard to the Previous Online Learning Experience construct, the level of significant impact on Perceived Usefulness and Perceived Ease of Use is less than its impact on Intention to Use an Online Learning Community. In other words, the greater the Previous Online Learning Experiences of users, the stronger their Intention to Use an Online Learning Community. This conclusion is accordance with the research results of Arbaugh and Duray (2002).

Furthermore, the impact that Perceived Ease of Use has on Intention to Use an Online Learning Community is not as strong as that of Perceived Usefulness and Previous Online Learning Experience. We found that when the system is easy to use, users feel it is more useful; therefore, they will have stronger intentions to use the online learning community. This is the same as the result derived by the original TAM (Davis, 1986; Venkatesh & Davis, 1996). In addition, if learners have Previous Online Learning Experience, even just experience in using related information technologies

(e.g., computer software and hardware, or Internet browsing), they may be much more willing to participate in an online learning community. They may also find it easy to operate the system, and they may have more problem-solving ability if they encounter difficulties with the system's operation. In the traditional classroom environment, it is not easy for teachers to control every learner's condition simultaneously. Applications of information technology in education are becoming more and more sophisticated, and can make up for the limitations of traditional learning methods.

# Chapter 7: Conclusion

The main purpose of this study is to propose a research model to evaluate the learners' intention to use an online learning community. Then, we provide guidelines to establish an online learning community in the future for reference. Besides, we describe the further development of such communities from the perspective of three external variables. In terms of Online Course Design, because students have different proficiency levels, the system compiles each student's profile in advance in order to design online courses adapted for individual students. We hope that after the course, a unit test will be held, and the system will record the test scores, which will form the basis for adjusting the level of difficulty of the next course. In terms of User-interface Design, we provide learners with comfortable and easy to read user-centered and personalized interfaces. We also provide a learning agent mechanism to guide students to connect to the correct learning path, and prevent information overload. In terms of Previous Online Learning Experience, in addition to learning through a Web-based browser, we let learners adopt different types of information technology, such as Tablet PCs, PDAs, or mobile phones, so that they can have different learning experiences. At the same time, we have to ensure that learners feel the system is both easy to use and useful. Learners can also attain significant benefits through interaction

with their peers. As a result, learners' Intention to Use an Online Learning Community would be stronger.

The contribution of this research is that it adds external variables to the original TAM, and uses an extra perceived variable to explore the use of an online learning community. As this is an English learning community, we now list several implications of the research results as guidelines for developing future online English learning communities.

(1) The Intention to Use an Online Learning Community is strongly and directly affected by Perceived Usefulness and indirectly by Online Course Design. Thus, when developing an online English learning community, we recommend that a comprehensively designed online English course should be the first priority. By developing user-centered programs, we will be better able to satisfy the needs of users.

(2) Users should be encouraged to gain more online learning experience and to use information technology to learn English. For example, users could surf other English learning websites so that it is easier to adapt to a possibly more complicated online learning environment in the future.

(3) Some advanced teaching aids should be considered when designing the user interface. For example, English vocabulary and phrases could be displayed by

multimedia techniques to strengthen learners' interest in learning English online.

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# Appendix A.

# Measurement items used in study of learner's intention to use an online learning community

| Item | Statement | Reference |
|---|---|---|
| *Online Course Design (OCD)* | | Self-developed |
| OCD1 | 1. The course content is interesting | |
| OCD2 | 2. The course content level is mid-range | |
| OCD3 | 3. The course content meets my needs | |
| OCD4 | 4. In general, I am satisfied with the design of the course content and quality | |
| *User-interface Design (UID)* | | Self-developed |
| UID1 | 1. The layout design of the website makes it easy to read | |
| UID2 | 2. The font style, color and layout of the interface make it comfortable for me to read | |
| UID3 | 3. In general, I am satisfied with the design of the interface of this website | |
| *Previous Online Learning Experience (POLE)* | | Self-developed |
| POLE2 | 2. I feel it would easier to operate the system if I had previous experience of using it | |
| POLE3 | 3. I will have a better understanding of how to use the system if it has a function for online guidance | |

| | | |
|---|---|---|
| POLE4 | 4. I will have a better understanding of how to use the system if a teacher or peer operates it first | |
| *Perceived Usefulness (PU)* | | |
| PU1 | 1. I could improve my learning performance by using this system | Davis (1989, 1993); Venkatesh (2001); Venkatesh & Davis (1996) |
| PU2 | 2. I could enhance my language learning proficiency by using this system | |
| PU3 | 3. I could increase my learning productivity by using this system | |
| PU4 | 4. I think using this system helps me learn | |
| *Perceived Ease of Use (PEOU)* | | |
| PEOU1 | 1. This system makes people feel that the interface design and information delivery are clear and easy to understand | Davis (1989, 1993); Venkatesh (2001); Venkatesh & Davis (1996) |
| PEOU2 | 2. It is easy for me to do the things that I want to do by operating this system | |
| PEOU3 | 3. I feel this system is easy to handle when I encounter a problem | |
| PEOU4 | 4. In general, I feel it is easy for me to use this system | |
| *Perceived Interaction (PI)* | | Self-developed |
| PI1 | 1. I usually discuss relevant English learning topics with others on the discussion board | |
| PI2 | 2. I usually send e-mails to others as a way of communicating | |

| | | |
|---|---|---|
| PI3 | 3. I usually engage in simultaneous learning interaction with others via Instant Messenger | |
| PI4 | 4. In general, I feel this Web-based learning environment provides good opportunities for interaction with other users | |
| *Intention to Use an Online Learning Community (IUOLC)* | | |
| IUOLC1 | 1. I intend to use this system for activities that involve English learning | Davis (1989, 1993); Venkatesh (2001); Venkatesh & Davis (1996) |
| IUOLC2 | 2. I will reuse this system for relevant learning activities | |

# Appendix B

# Interview questions items used

Location of school:
□ Northern Taiwan
□ Central Taiwan
□ Southern Taiwan

Gender: □ Male □ Female

Grade: □ Freshman □ Sophomore □ Senior

Have you ever had the experience in participation in the contest before?
□ Yes □ No

Have you ever had the experience in getting rewards after the contest before?
□ Yes □ No

Registration: □ Volunteer □ Teachers' encouragement

1. Why do you want to join in IWiLL online learning community?

2. What reasons do you participate in Reading Challenge contest?

3. Do you think what kind of assistance you could have for learning after joining in Reading Challenge contest?

4. Furthermore, do you have any other incentives to make you participate in the contest?

# Appendix C

# Interview data collection

**Q1. Why do you want to join in IWiLL online learning community?**

*"I think the books IWiLL recommended are pretty good. Some well-known literature is worth reading. I would also recommend to my friends about books they have to read."* (FHSH01)

*"It was so enjoyable when I read excellent books. Sometimes I feel that the stories in books had great inspiration to my life. I really like this…"* (TFG09)

*"Reading novels is like reading stories. Although I don't know all vocabulary in the books, this doesn't affect me too much. The plots of some stories are so interesting that I even forgot to eat and sleep…"* (WULING06)

*"The endings of some stories are very touching. After finishing the story, I would surf the Internet to search the comments on the novel for e-pals."* (AHS01)

*"I like detective and science fictions. These books are sometimes surprising and puzzling. Anyway, its content is interesting."* (TFG02)

*"When reading novels, we could also understand the culture and customs of foreign countries. It is very interesting."* (WULING04)

*"In addition to reading novels, at leisure time I would also watch CNN, Discovery, National geographic, etc. Learning English through different channels is great."* (TFG05)

*"Reading all kinds of novels and literature could broaden personal view."* (CYGSH02)

*"My interest in English learning comes from extensive reading English books. The novel is one of my favorite types."* (CLHS03)

*"I only talked about English at school in the past. After joining the online learning community, I could discuss my favorite movie plot with students from all over the country. I don't feel lonely by this learning method."* (TFG01)

*"When I study all myself, sometimes I feel a little bit of board. Because I don't know who I can share immediately with when I find some fun novels and movies."* (TSVS01)

*"Everybody has different opinions about some specific themes. And I could learn others' experience and knowledge by sharing different viewpoints."* (TRGSH01)

*"I know good friends on IWiLL. We often visit my good friends' blogs on IWiLL and offer encouragement as well as care to each other."* (TFG03)

*"When I encounter difficulties in learning, I would post problems in the discussion board to ask for support. I usually receive positive response from other members*

*soon. I appreciate the assistance from friends on the online community."* (WULING01)

*"I didn't access this online learning community, IWiLL, until my English teacher introduced it to me when I was a freshman in high school."* (CLHS01)

*"Our English teacher would ask all students in the class to join IWiLL and encourage us to participate in all related activities IWiLL holds."* (CYGSH02)

*"In the beginning, only few classmates in our class used IWiLL. With teachers' encouragement and classmates' experiences sharing, at least half of the students in the class joined this online learning community after a semester."* (TRGSH01)

**Q2. What reasons do you participate in Reading Challenge contest?**

*"Although I have rare limited capacity of English vocabulary, I would do my best to guess the meaning that authors want to express from the context."* (TFG04)

*"Participating in the contest is a challenge for me and others. I could know the level of my ability through the contest."* (TFG12)

*"In the process of participating in the contest, I want to know my weaker and stronger in terms of English reading."* (WULING07)

*"I participate in many contests about English from junior high school to senior high school, including the English speech contest, the English reciting contest, the English debate contest, etc. I hope I could get more wonderful grades in the future contest from the past accumulating experience."* (TFG06)

*"This is my third time to participate in IWiLL Reading Challenge contest. But this is the first time to be on the top 30. I am glad that the grade this time is better than before."* (TFG08)

*"I mainly aimed of participation in the contest instead of winning and ranking. So I was quite surprised to win this time. I will still continue to apply for this activity next time."* (WULING04)

*"In fact, I felt quite proud of participating in Reading Challenge contest because it was a large national and well-known English reading contest."* (CHCS01)

*"When the moment I stood on stage and accepted award, I completely felt the sense of honor and achievement at all."* (TFG09)

*"The content of the prize for me is not so important. By contrast, I care more about the recognition. I received after so many efforts."* (FHSH01)

**Q3. Do you think what kind of assistance you could have for learning after joining in Reading Challenge contest?**

*"The activity of Reading Challenge is held during the summer vacation. And this allowed me to have more time to be involved in studying English."* (TSVS01)

*"After entering the contest, I become more positive and more active. My willingness to study becomes stronger as well."* (AHS01)

*"In addition to books that the reading contest assigned, I read more than ten books about movie comments. The amount of books I read is three times more than that of usual."* (CYGSH01)

*"I try my best to reply the problems members posted. Because of there is always a group of enthusiastic members in the community providing relevant knowledge to answer my questions."* (WULING02)

*"Before posing questions, I would use keywords first to see if the questions someone posed here for asking before. And in fact, I can find the answers to questions in the discussion board."* (CYGSH03)

*"Sometimes when I don't know what English words to use to translate original meaning in Chinese, some senior members would provide valuable opinions to me. I even learn more about local and authentic slang."* (TFG10)

*"When bumping into some words I don't know, I will not immediately consult a*

*dictionary. I will try to understand the meaning of the full text first. For some unknown words don't affect reading."* (WULING01)

"*I would highlight the important paragraph in the article and take notes to help myself to understand the content when reading. I perceive that kind of learning method for my reading ability is better than those in the past."* (TFG07)

"*The frequency of some words repetition is very high in the same kind of novels. Reading efficiency has actually improved a lot."* (CLHS02)

**Q4. Furthermore, do you have any other incentives to make you participate in the contest?**

*"I mainly hope to improve my English ability by participating in all kinds of contests. If I were able to get a good grade, it should be helpful to apply for university admission in the future."* (TFG11)

*"Because I want to study abroad after graduating from high school, I see Reading Challenge contest as TOEFL reading simulation test. I am glad that the second TOEFL score in reading is better than the last time."* (TFG07)

*"I try my best to participate in competitions every time. The aim is to obtain a good grade. After I graduate from domestic college in the future, I will continue to study well-known and high reputation MBA program abroad. Many community members on IWiLL have the same dream like I have. We would learn and encourage each other."* (WULING04)

*"Although the sponsor doesn't offer substantial prizes or awards, this scholarship allows me to buy some English books to read for a freshman in senior high school like me."* (TFG04)

*"Regardless of awards or certificates, they are both very memorable for me. It's the best evidence for my hard work and efforts."* (WULING05)

*"The log-in counts and posting articles are high frequency for me because the themes*

*in the discussion area are interesting. Thus I continue to participate in every discussion. The purpose is to let everyone know that I am the most active person in the community."* (WULING05)

*"The more active to participate in discussions, the more opportunities others would know me. It is like a spotlight on me. I would be the focus of others' attention. Therefore, making someone become the top speaker by the contest is also the thing I expect most."* (TFG10)

*"Because I suffer from the light deaf in real life, I can't speak clearly. Therefore, I use text to communicate in the online community without learning and speaking problems. I just want to prove that I can also use the text to learn and interact with others as well as become the most active person in the discussion board."* (CYGSH01)