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The Structural Equation Model of English Teaching and Learning Achievement of the University Students in Eastern Thailand

By

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Abstract

The purposes of this study were 1) to study levels of English teaching and learning achievement of the university students in eastern Thailand, and 2) to create a structural equation model of English teaching and learning achievement of the university students in Eastern Thailand. The sample group was 395 students from 9 public universities, and the instrument used to collect the data was a questionnaire. The data was analyzed by descriptive statistics: percentage, mean and standard deviation, and inferential statistics to test hypotheses through the structural equation in order to analyze a causal relationship influencing the achievement of English teaching and learning of university students in eastern Thailand. The findings revealed that: 1) self-efficacy factors influenced the teaching and learning achievement at statistical significance level of p-value<0.05, i.e. preparation for English classes (mean=3.13, SD=0.91); constant practice of English four skills (mean=3.13 SD=0.91); encouragement of asking and answering a question while lecturing (mean=3.78, SD=0.87); 2) expectancy factors influenced the teaching and learning achievement at statistical significance level of p-value<0.05, i.e. improvement of marks and grades for English classes (mean=3.51, SD=0.83), and English leads to achieve expectations; and 3 educational technology factors influenced the teaching and learning achievement at statistical significance level of p-value<0.05, i.e. successful implementation of e-learning (mean=3.86, SD=0.90), effective introduction to a lesson, techniques of making a question or creating an activity for learners' understanding (mean=3.91, SD=0.91), and teaching strategies to keep class interesting (mean=3.83, SD=0.92), and 4) achievement factors influenced the teaching and learning achievement at statistical significance level of p-value<0.05, i.e. acquisition of 500-1,000 English words (mean=3.13, SD=0.90), and ability of making basic English conversation with foreigners (mean=3.07, SD=0.93)

Keywords: achievement, structural equation model, self-efficacy, expectancy, educational technology

1. Introduction

The world today is constantly stepping forwards in all dimensions even though there will be the interruption of some unexpected situations from time to time (Rao, 2019). The information, movements, and changes of economics, society, and culture inevitably affect one another. It is somehow called global or international communication in the age of globalization. The world is like a society where people depend on one another more and more. And some

languages are necessary for communication (Shobikan, 2017). Moreover, the world population requires the languages to find information, exchange knowledge, and so on. Learning a foreign language, especially, English, the language that majority of people in the world use as a tool to communicate one another, or call it as a "world language/global language", is necessary for the countries where people don't use it as their first language or mother tongue. And if an individual learns a language and constantly practices all the language skills, he/she can use it efficiently and effectively, and besides, they should learn how to implement technology to apply for all the skills (Ahmad, 2016). Moreover, the teaching and learning process must be in accordance with the nature and characteristics of the language. A variety of learning activities should be held to cover all the skills so that learners can find their own ways of self-dependence and lifelong learning. Therefore, today it's necessary for Thai people to learn another language because in an overall view, it' s not sufficient to use only Thai language for communication. Thai language is only used among Thai people and the current population of Thailand is of 70 million. If Thai people realize the importance of the world language or English language, and start paying attention to learn it, they can contact 1,100 people worldwide with approximately 24 percent of native English speakers from England, Scotland, Wales, Ireland, America, Canada, Australia, and New Zealand, and approximately 66 percent of nonnative English speakers from India, South Africa, Philippines, Singapore, and so on where people use English as one of their official languages, and 53 percent of the countries in the world where they use English as an official language (Johnstone, 2018; McKenzie et al., 2016; Wikipedia, 2017).

Today, most countries start paying attention to focus on the importance of learning English more and more seeing that if the majority of people in their country can use English to communicate efficiently and effectively, they will be surely an important part of their country development (Rubdy, 2001). This is in accordance with a study of David Graddol stating that the English language will be increasingly popular, and the number of learners will be constantly increased. And it is expected that in 10-15 years, there will be 2,000 million learners of the English language (Montgomery, 2013). The data of this research reflects that people on earth realize the importance of the English language in the modern world society because the English language is widely used in some situations or cases to communicate between government and government, such as international business, trade, investment, and so on. Thailand, as a developing country, is aware of the necessity of English skill development for its people, and Thailand has been facing a lot of problems of English teaching and learning (Wiriyachitra, 2002), and it can be divided into 2 points: 1) problems of teachers, for example, too much workload or burden of teaching, too many students per class, limited language proficiency of teachers, and 2) familiarity of their mother tongue or Thai language causes the problems of English pronunciation, grammatical structure, and so on. Lack of opportunities to use English for daily life communication, English lessons are not enough challenging, the learner is not so enthusiastic to learn English, the learner is shy to speak English with his/her classmates, and the learner is not responsible for learning the language (Wiriyachitra, 2002). University students still have the problems of asking their teacher in the classroom when they have a question in mind because they are afraid of making their teacher feel embarrassed, not being accepted with respect from their friends/classmates and teacher, making their teacher feel that his/her students don't pay attention while teaching, and being shy to ask the teacher in front of their classmate. By the way, asking their teacher after class is one of the effective solutions (Adamson, 2004).

Besides teacher's academic qualifications, the teacher's characteristics should be consisted of kindness, belovedness, clear explanation of lessons or lecture without additional revision (Adamson, 2004). For international programs, use of English is still a problem, for

example, a study among 929 students of international programs from 4 private universities found that most students had the problems of writing, followed by speaking, listening, and reading, respectively. The students were satisfied with the learning results of listening skills, followed by speaking, writing, and reading skills, respectively, and most of the students solved the problems through the use of English in their daily life, more attention in the classroom, revision of lessons after school, and homework routines (Pinyosunun et al., 2006).

Thailand has been facing the problem of teacher's limited qualifications reflected by the lower standards of learners' achievement. Although the government of Thailand has set up a high budget allocation for quality development of learners, and some budget is allocated for hiring native English speakers, the problem of teachers' qualifications hasn't been solved yet (Punthumasen, 2007). Types of teachers are related to learners' attention. (Grubbs et al, 2010). Besides, Thailand has some deep structural issues in running the educational policies, and the issues affect the achievement of teaching and learning. Therefore, to achieve the effective English development and process of teaching and learning, it is necessary to solve the problems starting from the structure of policy framework, and the development of appropriate and up-to-date curriculum to improve the educational achievement of learners as much as possible so that the learners can use English in their real life situations effectively, and implementation of modern technology for the highest advantages or benefits (Wiriyachitra, 2002), and there should be the effective process of quality development of teachers (Punthumasen, 2007). Because of the advancement of current technology, the teaching and learning process has been constantly improved, and educational technology is implemented to enhance the achievement of teaching and learning (Davies et al, 2013; Kirkwood & Price, 2014; Mckenna, 2012). The educational technology used to enhance the teaching and learning efficiency must be under the principles of creating personal motives and concepts. And due to a variety of educational technology, the teacher needs to apply a suitable process of teaching and learning with technological tools, and the teacher must have some experience of the educational technology as well (Ahmad, 2016; Azlim et al, 2015, Tuma, 2021). Moreover, some educational technology can urge and interest learners to learn, and create motivation to learn. Finally, the learners are familiar with the use of educational technology and often use it. It is an essential instrument to enhance learners' understanding of their lessons (Inayati, 2015; Yang &Wu, 2012).

Besides the appropriate technology and the teacher's skills, the learners' perception process is one of the important factors of effective teaching and learning. A personal learning competency is based on the personal perception ability, sense of receiver, prior experience, and basics of prior knowledge (Knecht-Sabres, 2010). Under the effective learning process, the learners must have their own goals of what they want to know or learn from the lessons. Whatever they want to know or see, it encourages the learners to struggle and concentrate to learn through senses of auditory, seeing, smelling, tactile, taste, and so on with comparison and rational thinking (Mills, 2014; Subraman, 2016), and learners' perception ability can be observed and seen through the learners' activities and behaviors. Understanding learners' behaviors leads to the teaching and learning process management affecting the change of learners' behavior to enhance their learning (Lai, 2015; Mills, 2014; Riasati, 2012).

1.1 Conceptual Framework

1.1.1 Self-efficacy Concept

Bandura (1986) stated that self-efficacy reflects the personal ability of decision making to tackle or behave for achieving the goals assigned. Self-efficacy depends on individual skills and decision making to complete the tasks. And some academicians clarified the meaning of self-efficacy, for example, Wood & Bandura (1989) explained that self-efficacy is a process of

individual self-control, effort, intention, and patience to achieve the goals assigned. Mcshane & Von Glinow (2003) and Chaimongkol (2008) claimed that self-efficacy is an individual's belief that he/she has capability which is the motivation to urge him/her to complete a task effectively. Bandura (1997) stated that self-efficacy is an individual's belief that a person has ability to organize and follow the guidelines which are necessary to create the outcomes they require. Chaimongkol (2008) explained the meaning of self-efficacy in the same way of Bandura (1997) stating that self-efficacy an individual's belief that a person has capability to handle and achieve what they require, effort to do things, and persistence to finish the tasks. Piyapotjanakorn (2015) stated that self-efficacy means an individual knows his/her own capability to follow the operational plans to achieve the goals provided.

1.1.2 Expectancy-value theory

Eccles and Wigfield, two experts of the theory, summarized the theory that the individual expectancy for success and value of success are important. It is the motivation that leads to decision making to do something and try for success. This theory deals with individual choice, persistence, and performance. It is the individual's belief that how well he/she can do the tasks provided, and what is valuable to be done (Atkinson, 1957; Eccles et al., 1983; Wigfield & Eccles, 2000). Modern expectancy-value theory is directly related to the individual expectancy and belief in work value, and the belief and value are directly related to psychology, society, and culture (Wigfield et al.,2000).

Eccles et al. developed the Expectancy-Value Model of Achievement Motivation (Eccles, 1987, 1993; Eccles & Wigfield, 1995, Wigfield & Eccles, 2000, 2002). The model focuses on sociopsychology of choice and persistence. He explained that expectancy for success means the individual's belief of what he/she is going to handle, and individual's belief in his/her ability. The value means to focus on the activity or benefits of the activity. The expectancy and value directly affect the individual competence, persistence and choice. The expectancy and value are urged by task specific benefits, such as perception of competence, task difficulty, individual goals, and self-esteem. Social cognitive variation is urged by social varieties and multiculture as well. Eccles (2009) explained that individual differences of the aims of doing an activity affect the motives of expectancy based on beliefs. Eccles et al.(1983) divided the components of motivation for the expectancy based on beliefs into 2 sections: 1) competence beliefs - judgement of individual capability to complete a task (Fredricks & Eccles, 2002), and individual attitude to current competency of completing a task or evaluation of capabilities of completing diffident activities (Xiang, McBride & Guan, 2004), and 2) Expectancy for success - individual's belief of specialization to assess how well he/she will complete a task in the near future and long term period (Wigfield, 1994).

Eccles et al. (1983) also divided the task values or subjective value as follows: 1) attainment value – individual awareness of task accomplishment, and in wider context, it means a wide variety of dimensions including perception of the task properties, such as simplicity and complexity, importance of tasks, etc. And to prove the importance and properties of value of individual goals, for example, he/she wants to be shapely, strong or healthy, intelligent or capable to challenge or have a chance to fulfill. Perception of the task properties can identify the levels of attainment value, for example, a student or a basketball player believe that throwing the ball into the hoop is important for any basketball player, then he/she will be enthusiastic and happy to practice to achieve the goals assigned. 2) Intrinsic value – individual happiness, amusement, or satisfaction which is derived from inside with perception or awareness while doing an activity shown by perceived interest. Wigfield and Eccles (2000) believed that the components of intrinsic value are different from those of intrinsic motivation. Hidi and Harackiewicz (2000) similarly claimed that individual perceived interest is more

specific than intrinsic motivation. Hidi (1990) studied and found that situation interest shows a positive motivation which is related to mental and physical elements in educational activities. It is a very close relationship of the prediction of student's participation in physical education activities (Chen et al., 2002). 3) Utility value – the benefits or advantages regarding the current and future goals or schemes assigned, and the utility value may not regard to the nature of the task or activity itself (Eccles et al.,1983), for example, a university student is interested in studying physical education program, not because he/she likes this program, but he/she wants to graduate (Chen et al., 2008), and other reasons of external factors directly related to internal purposes to participate any activity or to do something, such as the purpose of getting a job. 4) Cost – worth of the task which is the most important, and cost is separated from the factors mentioned above (Wigfield & Eccles, 2002) because the cost is a negative factor of doing activities. Cost consists of 3 components: a) perception of the effort to complete a task, b) waste of the time spent for an activity, and c) rate of mistakes (Eccles et al.,1983). These three components of cost are related to individual value to encourage him/her to complete the task assigned, and Eccles et al., (1983) also stated that an individual would like to know how hard he/she will try so that he/she can consider the worth of time spent for doing the activities and decide to cancel or proceed. A study of Eccles et al. (1983) found that if students evaluate an activity, and find that it will be failed, they will avoid doing the activity and find another way out, for example, if a student is not confident of his/her outcomes of completing an undergraduate degree program/course, he/she will select a private university instead of choosing the top ones of public university.

1.1.3 Educational Technology

There are three aspects of technology regarding teaching and learning: 1) learning about technology – the learner studies the operational systems of computer until he/she can utilize the systems, telecommunication through email, internet, and so on, 2) learning by technology – the learner gets new knowledge, uses computer- assisted instruction (CAI), practices some skills, and so on through technology, and 3) learning with technology – the learners learns an interactive system with technology, such as the practice of a language with a computer program showing feedback information, practice of problem-solving in simulation, and so on.

Some benefits of educational technology: 1) it helps learners find some more knowledge sources, 2) it helps learners learn by themselves from textbooks, mixed media, and so on, 3) it helps learners systematically analyze things to solve problems effectively, and 4) the development of teaching and learning instruments must be done so that teachers and learners can implement the potential and effective technology for the highest value. Besides the advantages of technology, the development of technology causes the negative impacts on society, for example, 1) social impact: technological change reduces human's participation in society and social engagement is interrupted because people can depend on themselves, 2) economic impact: technological change is the important cause of the replacement of technology for human workforce, 3) psychological impact: the advancement of communication technology changes human' s thoughts between face to face communication and electronic communication, 4) environmental impact: the advancement of technology can damage the natural resources, for example, manufacturing technology for mining, forestry, oil refining, etc. can cause air pollution, landslides, floods, and so on, 5) educational impact: educational innovation/invention is the development of new educational tools to enhance the teaching and learning process efficiently and effectively. It sometimes causes a problem of implementation because it is still new and strange for some teachers or learners. Therefore, the teacher, as a user of the educational innovation should catch up the advancement of educational technology, and learn its advantages and disadvantages before implementing it effectively.

1.2 Objective

The objectives of this research were 1) to study levels of English teaching and learning achievement of the university students in eastern Thailand, and 2) to create a structural equation model of English teaching and learning achievement of the university students in Eastern Thailand

2. Research Methodology

This study was the quantitative research implemented to study the association between the three factors: self-efficacy, educational technology, and expectancy and the achievement of English language teaching and learning among the undergrade students from the nine public universities in the east of Thailand through the implementation of the structural equation model analysis.

2.1 Research Samples

The samples of this study were 395 undergrade students with the ages between 18 and 22 from nine public universities in the east of Thailand. The sample size was calculated at 95% confidence level and 5% random errors (Vanichbuncha, 2002). The study with multivariate statistical analysis required a sample size of approximately 10-20 times of all observable variables (Lindeman et al., 1980). There were 14 observable variables in this study. Therefore, 280 samples or more were considered as appropriate sample size. And, the number of 288 samples was selected through a random sampling probability at same proportion from nine public universities (Table 1).

Table 1: *Number of sample sizes by public universities in the East of Thailand*

Public Universities	Sample Size (N)
1. Burapha University	32 (11%)
2. Rambhai Barni Rajaphat Univerity	32 (11%)
3. Rajabhat Rajanagarindra University	32 (11%)
4. Rajamangala University of Technology Tawan-ok	32 (11%)
5. Asian University	32 (11%)
6. Kasetsart University Sriracha Campus	32 (11%)
7. Trat Community College	32 (11%)
8. Sakaeo Community College	32 (11%)
9. King Mongkut's University of Technology North Bangkok Ranong Campus	32 (11%)
Total	288 (100%)

2.2 Research Tools

The instrument used to collect the data was a questionnaire. There were 3 parts of the questionnaire: Part 1 contained question items of ages, gender, universities, and college years. Part 2 contained question items of related factors and English language teaching and learning achievement: 1) six question items of self-efficacy, 2) five question items of outcome expectancy, 3) six question items of teachers' technological skills, 4) six question items of achievement. For part 2, a 5point Likert scale with 1 and 5 indicating the lowest and highest levels of satisfaction, respectively. The students were asked to score each of the question items from 1 as the lowest to 5 as the highest agreement. The interpretation was conducted. Therefore, the results of data analysis with the mean of the factors were interpreted as: 4.51-5.00 of the mean was as at the highest level, 3.51-4.50 at a high level, 2.51-3.50 at a moderate level, 1.51-

2.50 at a low level, and 1.00-1.50 at the lowest level, respectively. The last part contained a space of further suggestions for students if any.

2.3 Validity and reliability testing

The validity and reliability of the questionnaire were verified with 2 stages: Stage 1, the validity testing was conducted by three experts and academics to verity the content validity of the Item Objective Congruence (IOC) analysis. The IOC results were verified in accordance with the criteria assigned by Rovinelli and Hambleton (1977), stating that the question items with IOC value of 0.50 -1.00 are approved. The question items with IOC value of <0.50 are either removed or revised and this depends on recommendations of the experts. Therefore, all the question items in the questionnaire were verified with the IOC value of 0.60-1.00 because it was higher than 0.50. Stage 2, the reliability testing was verified by the researcher through the Cronbach's alpha coefficient (α) (Cronbach,1974), and the questionnaire was approved if the α was ≥0.7 (Cortina, 1993; Nunnally, 1978). Then, the questionnaire was distributed through the try-out with a group of 30 respondents with similar characteristics to the sample group. Finally, the questionnaire was reliable according to the Cronbach's alpha coefficient of 0.793-0.832, which was high than 0.70.

2.4 Data Collection

The researcher collected the data with the help of teachers from the nine pubic university in the east of Thailand. The university teachers distributed the questionnaire to their students to have it filled, and then, the teachers collected the questionnaire and returned it to the researcher.

2.5 Data Analysis

The data was analyzed by the descriptive statistics: percentage, mean, and standard deviation, and inferential statistics to investigate the causal relationships of the factors (self-efficacy, educational technology, and expectancy) with the achievement of English language teaching and learning among undergrade students. The goodness-of-fit of the structural equation model was evaluated by using the statistical criteria (Table 2). This data analysis was performed through the IBM SPSS statistics program.

Table 2: *Statistics and Criteria of the structural equation model evaluation*

Statistics	Criteria
1. Chi-square Probability Level (CMIN_p)	p> 0.05
2. Relative Chi-square (CMIN/df)	< 3
3. Goodness of fit index (GFI)	> 0.90
4. Root Mean Square Error of Approximation (RMAEA)	< 0.08

Silcharu (2012)

3. Results

3.1 Sample Characteristics

The study contained 395 undergrade students of nine public universities in the eastern Thailand (as shown in Table 3). Approximately, 80% of the respondents were women, and 51% were the 2nd year students, followed by the 3rd year students (27%), the 1st year students (13%), the 4th year students (9%), respectively. Approximately, 18% of respondents were students from Burapha University, 17% from Rambhai Barni Rajabhat University, 17% from Sakae Community college, and 17 % from Trat Community Univerisity, respectively (Table 3).

Table 3: *Number and proportion of study samples divided by sex, college years, and universities*

Characteristics	Men		Women		Total	
	Number	%	Number	%	Number	%
Total	80	20.25	315	79.75	395	100.00
College years						
• Year 1	14	17.50	38	12.06	52	13.16
• Year 2	42	52.50	158	50.16	200	50.63
• Year 3	15	18.97	92	29.21	107	27.09
• Year 4	9	11.25	27	8.57	36	9.11
Universities						
1. Burapha University	17	32.69	35	67.31	52	18.06
2. Rambhai Barni Rajaphat Univerity	10	20.41	39	79.59	49	17.01
3. Rajabhat Rajanagarindra University	11	26.83	30	73.17	21	14.24
4. Rajamangala University of Technology Tawan-ok	9	26.47	25	73.53	34	11.81
5. Asian University	14	35.00	26	65.00	40	13.89
6. Kasetsart University Sriracha Campus	11	30.56	25	69.44	36	12.50
7. Trat Community College	18	37.50	30	62.50	48	16.67
8. Sakaeo Community College	15	30.61	34	69.39	49	17.01
9. King Mongkut's University of Technology North Bangkok Ranong Campus	12	26.09	34	73.91	46	15.97

3.2 Results of analysis descriptive statistics

Table 4 shows the mean and standard deviation of factors and achievement of English language teaching and learning among the undergraduate students in the nine public universities in the east of Thailand. The results were explained as follows:

3.2.1 Self-Efficacy

Self-efficacy of the undergraduate students was at a moderate level with the mean of 3.27 (SD=0.68) and their top three variables of self efficacy were: "I regularly practice all four skills of English" at a high level of 3.78 (SD=0.87), followed by "I am enthusiastic to seek for knowledge to English language" at a high level of 3.56 (SD=0.97), and "I get ready before attending the English class" and "I pay attention while lecturing" at a moderate level of 3.13 (SD=0.91), respectively. When the gender of respondents was analyzed, it was found that the self-efficacy of male students was at a moderate level with the mean of 3.24 (SD=0.76) and their top three variables of male students were: "I regularly practice all four skills of English" at a high level of 3.68 (SD=0.96), followed by "I am enthusiastic to seek for knowledge to English language" at a moderate level of 3.29 (SD=1.03) and "I dare to ask and answer the questions while lecturing" at moderate level of 3.24 (SD=1.02), respectively. The self-efficacy of female students was at a moderate level of 3.28 (SD=0.66) and the top three factors of self efficacy were: "I regularly practice all four skills of English" a high level of 3.81 (SD=0.85), followed by "I am enthusiastic to seek for knowledge to English language" at a high level of 3.63 (SD=0.94) and "I get ready before attending the English class" at a moderate level of 3.14 (SD = 0.90) similarly to "I pay attention while lecturing" at a moderate level of 3.14 (SD=0.90), respectively.

3.2.2 Expectancy

Expectancy of the undergraduate students was at a high level with the mean of 3.93 (SD=0.69), and their top three variables of expectancy were: "I will use English in my daily life" at a high level of 4.41 (SD=0.86), followed by "I expect that English will give me the opportunity to succeed in your career" at a high level of 3.95 (SD=0.89), and "I expect that the English language will lead me to success" at a high level of 3.90 (SD=0.88), respectively. When the gender of respondents was analyzed, it was found that the expectancy of male students was at a high level of 3.87 (SD=0.78) and their top three variable of expectancy were: "I will use English in my daily life" at a high level of 4.30 (SD=0.92), followed by "I expect that English will give me the opportunity to succeed in your career" at a high level of 3.90 (SD=0.94), and "I expect that the English language will lead me to success" at a high level of 3.86 (SD=0.96), respectively. The expectancy of female students were at a high level of 3.94 (SD=0.66) and their top three variables of expectancy were,: "I will use English in my daily life" at a high level of 4.43 (SD=0.84), followed by "I expect that English will give me the opportunity to succeed in your career" at a high level of 3.96 (SD=0.88), and "I expect that the English language will lead me to success" at a high level of 3.91 (SD=0.89) similarly to "I will use English in my daily life" with the mean of 3.91 (SD=0.86), respectively.

3.2.3 Educational technology

Teacher's educational technology usage of the undergraduate students was at a high level with the mean of 3.92 (SD=0.75) and their top three variables of the teacher's educational technology usage were: "Teachers have a good knowledge and competency to implement the educational technology" at a high level of 4.05 (SD=0.81), followed by "Teachers can use modern technology to teach English" at a high level of 4.00 (SD=0.84) and "Teachers apply teaching activities through technology to make students understand more clearly" at a high level of 3.91 (SD=0.91), respectively. When the gender of respondents was analyzed, it was found that the teacher's educational technology of male students was at the high level of 3.85 (SD=0.71) and their top three variables were: "Teachers have a good knowledge and competency to implement the educational technology" at a high level of 3.96 (SD=0.79), followed by "Teachers can use modern technology to teach English" at a high level of 3.91 (SD= 0.90) and "Teachers apply teaching activities through technology to make students understand more clearly" at a high level of 3.85 (SD = 0.86), respectively. The teacher's educational technology of female students was at high level of 3.93 (SD=0.77) and their top three variables of the teacher's educational technology usage were: "Teachers have a good knowledge and competency to implement the educational technology" at a high level of 4.08 (SD=0.81), followed by "Teachers can use modern technology to teach English" at a high level of 4.02 (SD=0.82), and "Teachers apply teaching activities through technology to make students understand more clearly" at a high level of 3.92 (SD=0.92), respectively.

3.2.4 Learning outcome

English language learning achievement of the undergraduate students were at a moderate with the mean of 3.21 (SD=0.77), and their top three variables of the English language learning achievement were: "I can practice the four skills of English skills through electronic devices" at a moderate level of 3.43 (SD=0.96), followed by "I can read the signs in English" at a moderate level of 3.27 (SD = 0.85), and "I can watch English movies, listen to music, listen to news and others in English" at a moderate level of 3.24 (SD = 0.95), respectively. When the gender of respondents was analyzed, it was found that the English language learning achievement of male students was at a moderate level of 3.45, (SD=0.87) and the top three variables of the English language learning achievement were: "I can practice the four skills of English skills through electronic devices" at a high level of 3.60 (SD = 1.01),

followed by "I can watch English movies, listen to music, listen to news and others in English" a high level of 3.58 (SD=1.05), and "I can read the signs in English" at a high level of 3.53 (SD=0.91), respectively. For female students, their achievement was reported at a moderate level of 3.15 (SD=0.73) and their top three factors of the English language learning achievement were, namely, a variable of "I can practice the four skills of English skills through electronic devices" at a moderate level of 3.39 (SD=0.95), followed by a variable of "I can read the signs in English" at a moderate level of 3.21 (SD=0.82), and a variable of "I can watch English movies, listen to music, listen to news and others in English" at a moderate level of 3.16 (SD=0.90), respectively.

Table 4: *Descriptive statistics of factors and achievements of English language learning divided by sex (N=395)*

Factors	Men		Women		Total	
	Mean	**SD.**	**Mean**	**SD.**	**Mean**	**SD.**
Self-efficacy	3.24	0.76	3.28	0.66	3.27	0.68
1) I have four English skills (Self01)	3.05	0.86	2.88	0.72	2.92	0.75
2) I get ready before attending the English class (Self02)	3.09	0.97	3.14	0.90	3.13	0.91
3) I pay attention while lecturing (Self03)	3.09	0.97	3.14	0.90	3.13	0.91
4) I regularly practice all four skills of English (Self04)	3.68	0.96	3.81	0.85	3.78	0.87
5) I dare to ask and answer the questions while lecturing (Self05)	3.24	1.02	3.09	0.88	3.12	0.91
6) I am enthusiastic to seek for knowledge to English language (Self06)	3.29	1.03	3.63	0.94	3.56	0.97
Expectancy	3.87	0.78	3.94	0.66	3.93	0.69
1) I hope my grades and Scores and grades in English courses will increase (Expec01)	3.56	0.84	3.50	0.83	3.51	0.83
2) I will use English in my daily life (Expec02)	4.30	0.92	4.43	0.84	4.41	0.86
3) I expect that the English language will lead me to success (Expec03)	3.86	0.96	3.91	0.86	3.90	0.88
4) I expect that English will give me the opportunity to succeed in your career (Expec04)	3.90	0.94	3.96	0.88	3.95	0.89
5) I expect that my English proficiency accepted and admired (Expec05)	3.71	1.02	3.91	0.89	3.87	0.92
Educational Technology	3.85	0.71	3.93	0.77	3.92	0.75
1) Teachers have a good knowledge and competency to implement the educational technology (Educa01).	3.96	0.79	4.08	0.81	4.05	0.81
2) Teachers can use e-learning media to teach English effectively (Educa02)	3.84	0.89	3.87	0.91	3.86	0.90
3) Teachers can use modern technology to teach English (Educa03)	3.91	0.90	4.02	0.82	4.00	0.84
4) Teachers have interesting techniques to introducing the lessons (Educa04).	3.75	0.85	3.88	0.89	3.85	0.88
5) Teachers apply teaching activities through technology to make students understand more clearly (Educa05).	3.85	0.86	3.92	0.92	3.91	0.91

Factors	Men		Women		Total	
	Mean	SD.	Mean	SD.	Mean	SD.
6) Teachers know a variety of teaching techniques to make lessons more interesting (Educa06)	3.80	0.80	3.84	0.95	3.83	0.92
Achievements	3.45	0.87	3.15	0.73	3.21	0.77
1) I have learned more than 500 – 1000 words of English vocabularies (Achiev01).	3.26	1.00	3.10	0.87	3.13	0.90
2) I can speak basic English with foreigners (Achiev02).	3.33	1.04	3.00	0.89	3.07	0.93
3) I can practice the four skills of English skills through electronic devices (Achiev03).	3.60	1.01	3.39	0.95	3.43	0.96
4) I can read the signs in English (Achiev04).	3.53	0.91	3.21	0.82	3.27	0.85
5) I can watch English movies, listen to music, listen to news and others in English (Achiev05).	3.58	1.05	3.16	0.90	3.24	0.95
6) I can read news and information in a form of printed media in English (Achiev06)	3.43	0.99	3.03	0.92	3.11	0.95

3.3 Results of analysis the structural equation model

The analysis of structural equation models (models 1 and 2) to investigate the association between the variables and the achievement of English language teaching and learning was performed, as shown in the Figures 1 and 2. The results of analysis showed that the Model 1 was inconsistent with empirical information with p-value of 0.000, CMIN/DF of 4.047, GFI of 0.819, and RMSEA of 0.088 (Figure 1). Therefore, it was required to adjust variables of the model.

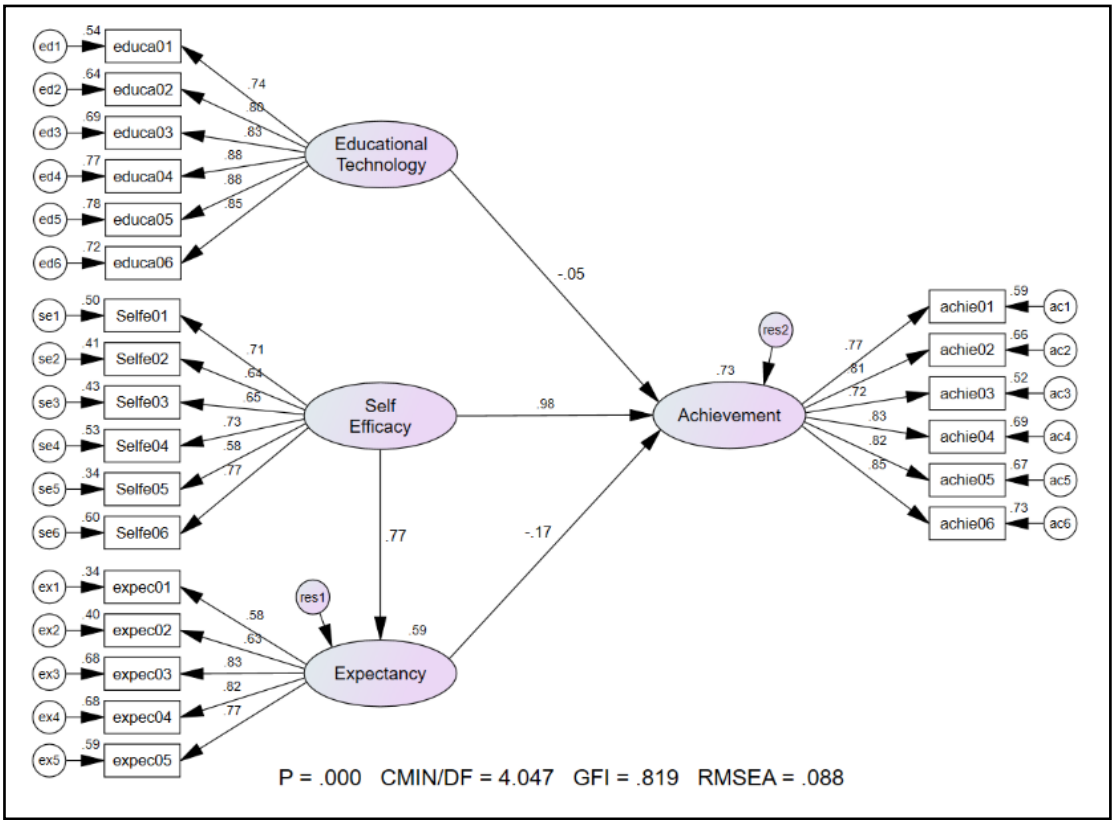

Figure 1 *The structural equation model analysis (Model 1 before being verified)*

After that, the model 2 was approved. The results of the model 2 analysis showed that it was consistent with the empirical information with p-value of 0.090, CMIN/DF of 1.328, GFI of 0.979, RMSEA of 0.029, as shown in the Figure 2. In the model 2, there were nine major factors related to the two achievement variables from English language teaching and learning among these undergraduate students: three variables of self-efficacy, i.e., "I get ready before attending the English class", "I regularly practice all four skills of English", and "I dare to ask and answer the questions while lecturing"; two variables of expectancy, i.e., "I hope my grades and Scores and grades in English courses will increase", and "I expect that the English language will lead me to success"; and four variables of educational technology, namely, "Teachers can use e-learning media to teach English effectively", "Teachers have interesting techniques to introducing the lessons", "Teachers apply teaching activities through technology to make students understand more clearly", and "Teachers know a variety of teaching techniques to make lessons more interesting"; and the two achievement variables, i.e., "I have learned more than 500 – 1000 words of English vocabularies", and "I can speak basic English with foreigners".

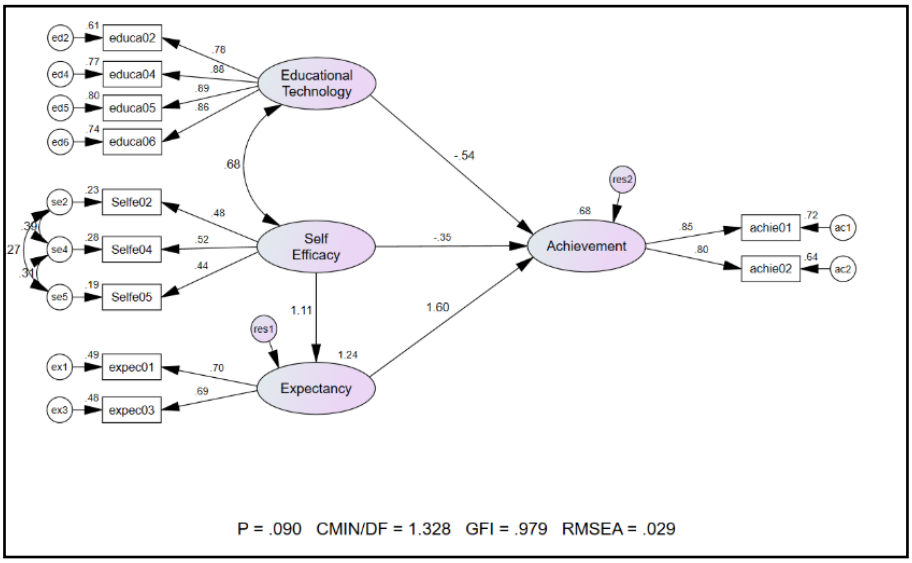

Figure 2 *The structural equation model analysis (Model 2 after being verified)*

4. Discussion

4.1 Self efficacy

The results of the study found that the self-efficacy of male and female students consisted of similar and different variables. Both "I have four English skills", and "I am enthusiastic to seek for knowledge to English language" variables of self-efficacy were at a moderate level. Besides, there were other different variables among the students, such as, "I dare to ask and answer the questions while lecturing" male students; and "I get ready before attending the English class", and "I pay attention while lecturing" for female students. The structural equation model analysis revealed that there were three variables of efficacy: "I get ready before attending the English class", "I regularly practice all four skills of English", and "I dare to ask and answer the questions while lecturing". This is in accordance with the study of Wood & Bandura (1989) stating that self-efficacy is a process of self-control, effort, and patience of a person. And, Mcshane & Von Glinow (2003) stated that self-efficacy is an individual's belief, and self-motivation that help him to perform and learn effectively. Moreover, Bandura (1997) explained that desired outcomes are achievable based on the belief of an individual's management and consistent.

4.2 Expectancy

The top three factors of expectancy for both men and women were: "I will use English in my daily life", and followed by "I expect that English will give me the opportunity to succeed in your career", and "I expect that the English language will lead me to success". In addition, female students also emphasized that "I expect that my English proficiency accepted and admired". Under the structural equation model analysis of factors that associated with the achievement of English language learning revealed that factors of expectancy that associated with achievement of English language learning were: "I hope my grades and Scores and grades in English courses will increase", and "I expect that the English language will lead me to success". Previous studies found that culture plays a crucial role for individuals to differently perceive difficulties in different tasks, and individual's goals and plans. This could be said that such differences and changes are driven by social and cultural diversity, as Eccles (2009) stating that people are different depending on goals influencing self-motivation to perform certain activities. Eccles et al. (1983) explained that the expectancy was associated with two factors including competence beliefs and success beliefs. Expectancy was provided to associate with the perceived values of tasks or activities (Berndt & Miller, 1990; Eccles et al., 1983; Greene et al., 1999; Siong & Ching, 2007).

4.3 Educational technology

The top three factors of educational technology for both men and women were: "Teachers have a good knowledge and competency to implement the educational technology", and followed by "Teachers can use modern technology to teach English" and "Teachers apply teaching activities through technology to make students understand more clearly". Under the structural equation model analysis of factors that associated with the achievement of English language learning revealed that factors of educational technology that associated with achievement of English language learning were: "Teachers can use e-learning media to teach English effectively", "Teachers have interesting techniques to introducing the lessons", "Teachers apply teaching activities through technology to make students understand more clearly", and "Teachers know a variety of teaching techniques to make lessons more interesting".

4.4 Achievement

From this study, it was found that male students had higher English language learning achievement than female students as the means of male students were higher than female students. The achievement variables consisted of "I can practice the four skills of English skills through electronic devices", "I can watch English movies, listen to music, listen to news and others in English", and "I can read the signs in English". Under the structural equation model analysis of factors that associated with the achievement of English language learning revealed that the main achievements of English language learning were: "I have learned more than 500 – 1000 words of English vocabularies" and "I can speak basic English with foreigners". Importantly, the nine factors with positive impacts on the achievements of the undergrade students were: three factors of self-efficacy, i.e., "I get ready before attending the English class", "I regularly practice all four skills of English", and "I dare to ask and answer the questions while lecturing"; two factors of expectancy, i.e., "I hope my grades and Scores and grades in English courses will increase", and "I expect that the English language will lead me to success"; and four factors of educational technology, i.e., "Teachers can use e-learning media to teach English effectively", "Teachers have interesting techniques to introducing the lessons", "Teachers apply teaching activities through technology to make students understand more clearly", and "Teachers know a variety of teaching techniques to make lessons more interesting". These results were in accordance with previous studies. Ruangchai Pariban (2003)

mentioned that language learning achievement for information-based learning was related to individual's attitude towards his/her subjects, teachers, classroom environment, and so on. Moreover, sociodemographic factors were also the important components of the learning achievement. This is in accordance with a study of Wangpho (2005) stating that the factors influencing English learning achievement of grade-6 students are gender, academic achievement motives, parents' occupation. The use of technology was associated with the achievement, for example, teaching media and audio-visual media used in teaching. Some schools had insufficient teaching materials, especially small and rural schools with low budgets (Ketprasit, 2007). In addition, some schools had a limited number of teachers with English-language teaching skills and the curriculum was not in consistent with the context, and classroom environment. Thavornrath (2007) also stated that English language learning achievement depends on a variety of factors, such as learners' skills, teaching activities, teaching techniques, parent's knowledge level, students' future expectation, opportunities, and attitude towards subjects. And a study of Suwanakij (2007) claimed that the cause of failure in learning English language was divided into 2 parts: 1) students' opinions, i.e., learners' negative attitude towards the English language and their own expectations, learners' attitude towards teachers, fear of making mistakes in English, learning environment around learners, skill training, anxiety and stress using English outside of class, the students' interest, and the amount of homework; 2) English language teachers' opinions, i.e., English learning behavior, prior knowledge of English, environment around students, media used, teaching activities outside the classroom, English language opportunities, and the number of teaching hours.

4.5 Strengths and Limitations of this study

There are a few strengths of this study: 1) it is the analytical model tested for both validity and reliability, 2) samples of the study are from different universities in the east of Thailand, and 3) it is the study that focuses on the structural equation model covering relevant issues related to English language teaching and learning. However, there are two major limitations of the study: 1) this study's results cannot be used to describe in other educational contexts, e.g., areas, target groups, and other educational institutions; and 2) the study does not cover other factors, such as social, economic and health factors.

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