# การประเมินบทเรียนคอมพิวเตอร์ช่วยสอนสำหรับนักศึกษา มจธ. ที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ¹

# จรัสดาว อินทรทัศน์ <sup>2</sup>

มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี บางมด ทุ่งครุ กรุงเทพฯ 10140

รับเมื่อ 1 มีนาคม 2547 ตอบรับเมื่อ 15 กรกฎาคม 2547

## บทคัดย่อ

บทความนี้เสนอผลการประเมินประสิทธิผลของบทเรียนคอมพิวเตอร์ช่วยสอนเรื่อง "How to deal with tenses" ซึ่งเป็นบทเรียนแบบพึ่งตนเอง เพื่อเสริมทักษะหรือช่อมเสริมความรู้พื้นฐาน สำหรับนักศึกษามหาวิทยาลัย เทคโนโลยีพระจอมเกล้าธนบุรี การศึกษาเป็นแบบกึ่งทดลองกลุ่มเดียว วัดผลสัมฤทธิ์ก่อนและหลัง กลุ่มตัวอย่าง เป็นนักศึกษาปริญญาตรีและบัณฑิตศึกษา 60 คนจากคณะต่างๆ ของมหาวิทยาลัยที่สมัครเข้าร่วมการเรียน โดยแบ่ง กลุ่มการเรียน 3 กลุ่ม กลุ่มละ 20 คน เก็บข้อมูลด้วยแบบทดสอบผลสัมฤทธิ์ 2 ชุด ซึ่งเป็นแบบทดสอบคู่ขนาน สำหรับใช้กับก่อนและหลังการเรียน และแบบสอบถามความคิดเห็นของนักศึกษาที่มีต่อบทเรียนคอมพิวเตอร์ช่วยสอน ผลการศึกษาพบว่า หลังเรียนนักศึกษามีผลสัมฤทธิ์เพิ่มขึ้นอย่างมีนัยสำคัญที่ 0.05 และมีสัมประสิทธิ์สหสัมพันธ์ ระหว่างคะแนนก่อนกับหลังการเรียน 0.78 ซึ่งสัมพันธ์กันอย่างมีนัยสำคัญที่ 0.01 แสดงว่าบทเรียนคอมพิวเตอร์ช่วยสอน ช่วยสอนนี้มีประสิทธิผลทำให้นักศึกษามีผลสัมฤทธิ์ทางการใช้กาลในภาษาอังกฤษดีขึ้น และนักศึกษาส่วนมากเห็นว่า บทเรียนมีความเหมาะสม น่าสนใจและเป็นประโยชน์มาก จึงควรมีการสร้างและพัฒนาบทเรียนคอมพิวเตอร์ ช่วยสอนนี้มีประสิทธิผลทำให้นักศึกษามผลสัมฤทธิ์ทางการใช้กาลในภาษาอังกฤษดีขึ้น และนักศึกษาส่วนมากเห็นว่า บทเรียนมีความเหมาะสม น่าสนใจและเป็นประโยชน์มาก จึงควรมีการสร้างและพัฒนาบทเรียนคอมพิวเตอร์ช่วยสอน ทางภาษาอังกฤษดีขึ้น และนักศึกษาส่วนมากเห็นว่า

<sup>&</sup>lt;sup>1</sup> บทความนี้ได้นำเสนอในที่ประชุมนานาชาติ World CALL 2003: CALL from the Margins ที่เมือง Banff, Alberta ประเทศแคนาดา เมื่อวันที่ 7-10 พฤษภาคม พ.ศ. 2546

<sup>&</sup>lt;sup>2</sup> ผู้ช่วยศาสตราจารย์ สายวิชาภาษาพื้นฐาน คณะศิลปศาสตร์

# **Evaluation of CALL Materials for EFL Students at KMUTT, Thailand<sup>1</sup>**

Charatdao Intratat<sup>2</sup>

King Mongkut's University of Technology Thonburi, Bangmod, Toongkru, Bangkok 10140

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### Abstract

This article presents an evaluation on the effectiveness of a computer assisted language learning (CALL) material "How to deal with tenses" which was designed as self-access supplementary and remedial exercises for students at King Mongkut's University of Technology Thonburi (KMUTT) Thailand. The study was quasi-experimental one-group with pre-test post-test. The subjects in this study were 60 volunteers who were undergraduate and graduate students from several faculties in the university. They were divided into 3 groups with 20 volunteers in each group. The data was collected from 2 parallel proficiency tests before and after studying the material and from a set of questionnaires asking for their comments on the CALL material. Results of the study showed that the learner proficiency increased significantly at 0.05 level. The correlation coefficient between the pre-test and the post-test scores was 0.78, which was significant at 0.01. This indicates that this CALL material is effective in increasing the learner's proficiency in using English tenses and most students indicated that the material was appropriate, interesting and very useful. As a result, more self-access CALL materials should be created and developed for KMUTT students.

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<sup>&</sup>lt;sup>2</sup> Assistant Professor, Department of Language, School of Liberal Arts.

#### 1.1 Student's weak point in English grammar

As an English lecturer, the researcher noticed that though most students studied English compulsory courses, they did not perform as well as expected in English. From their experiences in studying science and technology, the students can cope with reading English texts but they usually make a lot of mistakes in writing. One of the obvious reasons is the lack of grammar skill. These mistakes should be considered carefully because as Tarone and Yule [1] say, they are an aspect of the learner's interlanguage which will seriously interfere with any further development in the ability to use the second language effectively.

Prior to preparation of material, the researcher conducted a survey in January, 2000 of 213 KMUTT students asking what they considered as their problems in English grammar. The majority, 70% of all the students answered that tenses were one of their problems. When asked to rank problems according to their seriousness, 42.7% of the subjects rated tenses as the most serious problem.

The result of the survey made it clear that the students have problems in using tenses and require more advice and practice. However, the whole class practice may not solve individual problems, the researcher then designed self-access learning material "How to deal with tenses" to supply the students more knowledge, especially in using tenses.

#### 1.2 Grammatical exercises in new form

Comprehension of tenses plays a vital role in acquiring English language skills for Thai students whose native language does not apply grammatical inflections. It is naturally difficult for many Thai students to overcome this problematic performance. As computer assisted language learning (CALL) materials using sounds and animation in combination with texts are attractive and challenging for the learners, grammatical exercises in forms of CALL can also be more interesting than conventional paper-based materials.

#### 2. The design of "How to deal with tenses"

The researcher designed this self-access material "How to deal with tenses" as a supplementary and remedial practice for KMUTT students and interested staff who want to improve their English writing skill. The objective of the material is to review the learner's background knowledge about tenses in English and to train them to use these tenses grammatically and appropriately. The material is divided into 5 chapters including Present, Past, Future, Continuous and Perfect. Each chapter is basically composed of introduction that describes the tense usage, examples and tips that help the learners to review their background knowledge. After this, there are exercises to practice and answer keys with self-access scores.

The material was originally paper-based and was distributed as supplementary handouts to undergraduate students who studied Fundamental English courses at KMUTT with the researcher from 2000 to 2001. These students came from several departments in Engineering and Science such as Computer Engineering, Electrical Engineering, Mechanical Engineering, Civil Engineering, Chemistry, Microbiology, Mathematics, and Physics. The material had received a warm welcome from the students. According to their comments, the researcher had added more learning tips and at the end of every chapter, a list of books with specific lessons for further study had been provided. Then, with technical support from the programmers of the Education Technology Services and Resources Center, the material was developed into CALL version with the Authorware program.

This new version provides facilitating appendix on irregular verb forms and grammar rules for changing singular nouns into plural. Moreover, computer techniques such as colorful highlighting, animation and sound effects helped to make the lessons more attractive than the original paper-based version.

In designing this CALL material, the researcher followed the criteria as previously explored and especially some suggestions from Cross [2] that learners practice and internalize vocabulary, grammar and structures through games because motivation can be enhanced by the play and the competition. The researcher then intended to make this material both useful and enjoyable for the learners. Thanks to the computer techniques, the material is user-friendly to the learners. They can click into appendix, and find out easily the correct verb forms. When they move the cursor on the illustration, the matching vocabulary will be highlighted. Many exercises were designed as games with self-access scores. Examples of the material are shown in Appendix 1.

This material was produced and uploaded to the web site <u>http://www.etsrc.com</u> by The Education Technology Service Resource Center, KMUTT in April 2002, ten months prior to this evaluation. As it is on the web site, the learners can study this material by themselves at will, when it is their most convenient time and at their own pace and style of studying. As a result, the learners should be able to improve their English writing skills, especially in dealing with tenses.

In order to evaluate the material, a number of KMUTT students volunteered to practice the exercises and rate several aspects of the software program, as well as the content and the overall characteristics of the material.

#### 3. Objective of the study

This study evaluates the effectiveness of the CALL material "How to deal with tenses". The data used to evaluate the project came from the comparisons between the pre-tests and post-tests and from comments from the volunteer KMUTT student subjects about improving the existing material and developing new materials in the future.

#### 4. Hypothesis of the research

This research hypothesizes that the subjects will improve their proficiency in using English tenses at the sentence level after visiting the web site and practicing the material.

#### 5. Literature review

#### 5.1 Advantage of Self-Access materials

Many educators such as Lamb [3], Gardner and Miller [4], and Rujiketgumjorn [5] support the idea that autonomous learning satisfies learners by allowing them to choose to learn according to their needs. In this way they feel that they work better.

#### 5.2 Advantages of CALL materials

CALL (computer assisted language learning) is the method of teaching and learning language using computer as an instrument. The theory of CALL implies the theory of Second Language Acquisition and its framework of conditions for optimal language learning environments. For example, learners have opportunities to interact and negotiate meaning, learners are involved in authentic tasks, learners have enough time and feedback and learner autonomy is supported [6].

Computer assisted language learning (CALL) materials are advantageous. They provide interaction with learners can reply immediately to questions or commands and can guide the learner towards the correct answer while adapting the material to his/her performance. This flexibility is impossible to achieve with paper-based handouts and worksheets [7-9].

#### 5.3 CALL material evaluation

When buying or designing CALL materials, language learning potential should be the central criterion in evaluation. For example, does the software incorporate manageable and meaningful input? How is new language introduced and is there sufficient (optional) practice possible before learners produce language or not? [10-12].

#### 6. Methodology

#### 6.1 Subjects:

The subjects in this study were 60 volunteered KMUTT students who were studying in undergraduate and graduate levels from mixed faculties. At KMUTT, the students usually study English in the second and fourth year. The second year students are studying the last compulsory English courses whereas the fourth year students study English electives. Likewise, most graduate students take English in-sessional courses. The researcher therefore limited research population within these three groups of students and equally recruited 20 volunteers from each of the three specified groups.

#### 6.2 Instruments:

#### A pre-test and a post-test

The researcher designed a pair of parallel tests based on the information of the material "How to deal with tenses". After being piloted on some volunteers, the tests were developed for validity and for the learner's better understanding. These parallel tests were used as the pre-test and the post-test. Each of the tests included 30 objective questions on the use of present, past, future, continuous and perfect that the learners can practice when visiting the web site. Both had slightly different context and the total score of each test was 30. Before the learners visited the web site, they had taken the pre-test. Then, they practiced the exercises for one month. After that, they took the post-test and gave comments in the questionnaire.

#### A questionnaire

This is the research instrument to ask the learners for some comments on several aspects of the software program, the contents of the material and the overall characteristics of the material. There were also open-ended questions for the subjects to comment and give further suggestions. The questionnaire was in Thai and was piloted together with the pre-test and the post-test.

#### 6.3 Analysis of the data:

The scores of the pre-test and the post-test were calculated and the means were compared by t-test. The Pearson's Correlation of the pre-test and the post-test was calculated next.

Another set of data came from the questionnaire, which consisted of rating questions and open-ended questions. The rating data were calculated for statistical description and analyzed. The open-ended answers were analyzed and discussed for the revision and improvement of the material.

#### 7. The findings of the research

7.1 The subjects' proficiency in using tenses increased after they had practiced the exercises.

The subjects took the pre-test before they visited the web site and practiced the exercises. Their scores were graded and recorded. After approximately one month, the subjects came back and took the post-test. Their scores were then compared with descriptive statistics, t-test and Pearson's correlation. From the comparison between the pre-test and the post-test, the means of the post- test was higher than the means of the pre-test as shown in the table below.

#### Table 1. The pre-test and the post-test scores

	N	Minimum	Maximum	Mean	Std. Deviation	
PRE	60	5.00	22.00	15.2333	4.2720	
Valid N (listwise)	60					
Valid N (listwise)	60					

#### **Descriptive Statistics**

**Descriptive Statistics** 

	Ν	Minimum	Maximum	Mean	Std. Deviation	
POST	60	8.00	22.00	17.8000	3.6444	
Valid N (listwise)	60					

#### Paired Samples Test

Test	X	S.D.	D	S <sub>d</sub>	Т	Sig
Pre-Rest	15.2333	4.2720	2.5667	2.6767	7.427	.000
Pre-Rest	17.8000	3.6444				

From Table 1, the minimum score of the pre-test was 5 and the maximum score was 22. Its mean was 15.2333. On the other hand, the minimum score of the post-test was 8 and the highest score was 22. Its mean was 17.8000. The standard deviation of the pre-test was 4.2720 but the one of the post-test was 3.6444. The difference between the two tests was 2.5667 and the standard deviation was 2.6767. This statistics shows that the subjects did better scores in the post-test than in the pre-test. The scores of the weak learners and the good learners were less different from each other in the post-test. And when compared with t-test, the subjects' scores from the post-test were significantly higher than the scores from the pre-test (t=7.427) at 0.05 level and the correlation between the two tests is significant (r=.783) at 0.01 level.

From the analysis of the data, it is evident that the subjects who practiced the exercises in this material increased their English writing proficiency in using tenses.

The researcher then studied further in detail how much the subjects developed after they had practiced exercises. From the findings, the majority of the subjects (about 70%) got higher scores in their post-test than in their pre-test. The minority of the subjects (about 10%) got 1 and 2 less marks in their post-test than pre-test. As for the subjects who got higher scores in the post-test, about 45% of all the subjects got 1 to 4 more marks. About 25% got 5 to 10 more marks and about 20% of all the subjects got the same scores in both tests. This finding clearly support the hypothesis that the subjects increased their English writing proficiency in using tenses after they had studied the CALL material.

#### 7.2 The subjects' comments upon the material:

#### 7.2.1 Comments on overall characteristics

In the questionnaire, the subjects were asked to comment on this topic with five-scale rating. The highest rating score was 5 whereas the lowest was 1. If the subjects thought that these characteristics were appropriate for them, they would rate high score or vise versa. For the subjects whose computer lacked some function, they would rate this as none. The rating for this topic consists of 11 aspects:

- 1) Design of the background
- 2) Design of function buttons
- 3) Page layout
- 4) Fonts

- 5) Illustration and animation
- 6) Sound effect
- 7) Menu
- 8) Introduction
- 9) Reference for further study
- 10) Level of interest in this material
- 11) Level of usefulness.

The results are shown in Table 2 as follows.

Table 2 Overall characteristics of the material

	Rating scale (%)							
Characteristics N=60	none	1	2	3	4	5	X	S.D.
1. Design of the background	-	-	1.7	30	46.7	21.7	3.88	.76
2. Design of the function buttons	-	-	-	43.3	38.3	18.3	3.75	.75
3. Page layout	-	1.7	-	18.3	65	15	3.91	.69
4. Fonts	-	-	-	13.3	63.3	23.3	4.10	.60
5. Illustration and animation	-	-	1.7	33.3	43.3	21.7	3.85	.77
6. Sound effect	8.3	-	1.7	36.7	41.7	11.7	3.38	1.23
7. Menu	-	-	1.7	23.3	56.7	18.3	3.91	.69
8. Introduction on usage	-	-	1.7	21.7	55	21.7	3.96	.71
9. Reference for further study	-	-	3.3	30	48.3	18.3	3.81	.77
10 Level of interest	-	-	1.7	16.7	60	21.7	4.01	.67
11. Level of usefulness	-	-	1.7	20	60	18.3	3.95	.67
Total Average	0.75	0.15	1.38	26.05	52.57	19.09	42.55	5.22

In the finding, the subjects gave comments on several aspects of the material such as the appearance and they also rated their opinion on the level of interest and usefulness of the lessons. The total average was 42.55 (out of 55) and this shows that most subjects thought, overall, the appearance of the material was very appropriate. It is noticeable that the highest score went to the fonts used in this material. The level of interest was the second highest of all the scores and this paralleled the introduction on usage and the level of usefulness that were also highly rated. The menu and the page layout were also rated equally high. All aspects were almost equally rated as appropriate. Among these, however, the sound effect was rated the lowest. This might be due to some subjects who said that their computer did not provide sound effect so they rated this aspect as none.

Apart from these rating questions, there were some other open-ended questions in the questionnaire for the subjects to comment freely as follows:

#### 7.2.2 Comments on the software program

From the subjects' comments, though many of the subjects were satisfied with the software program, some said they confronted problems. They found it difficult in getting in and off the program. They thought it was not convenient to load Plug-in program before studying the material because it took time and sometimes the program did not work. They said they would prefer some automatic program and some subjects recommended other program such as Flash. Some subjects reported that they could not get into the web site at home and some suggested that there should be more explanation on the web page about how to get to the material and some preferred that more function buttons such as printing should be added.

#### 7.2.3 Comments on the contents of the material

Most of the subjects were satisfied with the characteristics of the material. However, they would preferred more examples, more explanations, more exercises at different levels of difficulty and a free choice in selecting exercises. They thought the exercises were more challenging when they were controlled by time limit. They suggested a wider variety of exercises that ought to be provided with answer keys and explanations for the answers.

#### 7.2.4 Comments on the revision of the material

Some subjects preferred that the designer should add more exercises once in a while. There was one subject in particular, who suggested that the writer should revise and modify the material every two or three months.

#### 8. Summary

From the study, it can be summarized that most of the subjects increased their proficiency in using English tenses after visiting the web site and practicing the exercises of this CALL material. This reflects the effectiveness of the material, thanks to all the CALL techniques that could attract their interest and hold their attention.

The subject's preference for the visual aspect in CALL supports the study of Scholfield [7] Mirescu [8] and Brett [9]), as mentioned before that CALL is naturally attracting and provides more encouragement than conventional grammar books.

#### 9. Discussion

From the findings of this research, there are some interesting aspects that the researcher would like to discuss.

#### 9.1 Practicality of the material

The development of the learners' English writing proficiency in using tenses was significant and supported the hypothesis. From the findings, most subjects gained more scores in the post-test than in the pre-test. This finding reflects the practicality of this CALL material as the supplementary and remedial exercises for interested learners. However, some minority groups remained constant and if the learners made some mistakes out of carelessness or negligence, they would naturally got less marks in their post-test than in their pre-test. This phenomenon was quite normal as well as in any class, and it might be due to the individual awareness, attention, hard working or the full limit of improvement.

#### 9.2 Development of one's own material

Other suggestions from the subjects were on preferential elements of the material such as explanation of answer keys, quantity and variety of exercises, level of difficulty of language and exercises, etc. These suggestions support the study of Murray and Barnes [9], Bader [10] and Chapelle [11] that one should consider these elements when evaluating the quality of CALL materials.

The learners' suggestions on updating and improving this material reflected some very interesting feedback for the CALL designers to develop or revise a material. Though most subjects thought this material was very appropriate, their suggestions in detail reflected their desire for some more impro vement in certain aspects. For example, they wanted more explanation, examples, and exercises with answer keys with explanation.

Most subjects said they were satisfied with the visual aspects of the material. They valued the size of fonts, the outline, the color, the animation and the illustration of the lessons. They appreciate the game-like exercises or competition with time limitation. In their opinion, if some animation were added, younger learners would be more interested in the material.

As for CALL designers, these 'special effects' should be added to attract the learners to study the material.

As for teachers who want to develop their own CALL materials, one simple way to obtain this essential information is by doing a needs analysis prior to the material design because, as Watts [13] recommends, a good CALL material should be learner-based. Thanks to this analysis, the material will have high potential to correspond to the learner's needs and interests and consequently provides them with the most fruitful practice.

Furthermore, the comments on the construction of the material, the technological capacity of one's institute should also be considered. The lack of equipment or funds for the software programs can obstruct creating more elaborate materials found in commercial products. The teaching skills of the developers are also important, as their knowledge of design, authoring software as well as programming skills, can prevent such occurrences of long loading times or poor interfaces for exploring the material. However, teachers can try to create simple CALL exercises within their limited resources because they are the ones who know the best alternatives between the less-to-perfect material and none-at-all.

#### 9.3 The tips for CALL designers

In order to design a good program, the team should include designers for the graphics, sound and design of the interface, a programmer for the technical aspects and the teacher for the language, testing and evaluation aspects.

When designing the program, the first step should be the design of the interface and selection of colors, fonts, control buttons, etc. When "everyone" is happy with that, then the project can continue. Interfaces are important for the following reason-familiarity. If the team use the Windows operating, then they can go to any computer with that operating system and feel confident that they know where everything is. The same principals should be applied to any program they want to develop. If it will run on Windows, or a popular program that runs on Windows, such as the web browser. Everyone knows what to do if they want to move forward, backwards, home or exit.

However, in designing a CALL material that is a self-access material, one should be aware that since the learners study by themselves, every aspect should be user-friendly. For example, all the description and explanation should be simplified with as many examples as can be and extra help in the appendix is desirable as well as suggestions for further study.

The researcher hopes that these preferences suggested by the subjects in this study could be applied for developing successful learner-based CALL materials that serve the needs of other groups of students in Thailand, as well as in other countries.

#### **10. Acknowledgements**

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## Appendix 1

### Examples of CALL material "How to deal with tenses"







