

*Material Selection, Design and Construction through CALL:
EFL Teacher Reflection*

Suphatra Sucharitrak, Kasetsart University KPS, Thailand

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Abstract

The commercial software for English language learning in a computer lab has recently been implemented as part of practice hours in English Foundation courses for nursing college students. Regarding the results of course evaluation surveys conducted by the department, it was found that the contents in the software was not relevant to the course objectives and it was hard to find connections between the course contents and the future language needs of the students in nursing profession. As a result, English Foundation course for practice hours needs to be revised. As it is hard to find the English language commercial software that meets the requirements for nursing students, the researcher, EFL teacher was interested in designing and developing Computer-Assisted Language Learning (CALL) lessons to use for the course. The lessons were content and language integrated, taught through task-based activities on CALL platform. The study provides the details of the three major steps of material selections, the design of CALL English lessons, and the construction of CALL English lessons. The reflections of the problems and the solutions which EFL teacher as a developer came across throughout the process were reported.

Keywords: Material Selection/ Design/ Teacher Reflection

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Introduction

Designing English language instructional materials for specific profession through Computer-Assisted Language Learning (CALL) Lessons gain more popularity in language courses due to the effectiveness of increasing students' language proficiency and motivation. CALL Lessons can reduced students' anxiety and also promote individual learning. Recently, the Department of English has implemented students using commercial software in a computer lab as a part of practice hour's in general English courses for nursing students. The current software focused on language skills for general communication rather than for academic and professional purposes. This set-up can be considered counter-productive especially for professional nurses. Regarding the results of course evaluation surveys conducted by the department, it was found that the contents in the software were not relevant to the course objectives and it was hard to find connections between the course contents and the future language needs of the students in nursing profession. As a result, English foundation course for practice hours needs to be revised. As it is hard to find the English language commercial software that coincides with the foundation English course for nursing students, the researcher, EFL teacher was interested in designing and developing CALL English lessons to use for the course. The lessons were content and language integrated, taught through task-based activities on CALL platform. The particular language discourse for communicating at hospitals was emphasized in each lesson.

This research study aimed to develop effective CALL English Lessons for Nursing Science Students. It was guided by the research questions of what challenges were encountered by an EFL teacher as a CALL developer. The qualitative research method was employed and researcher's journal was used in order to record any challenges and direct experiences researcher came across and CALL Lesson development process from an EFL teacher as a CALL developer were reflected. Many challenges would be faced by the researcher who was an EFL teacher and had fair knowledge of computer programs were recorded. It could be a good experience for other to see the possible difficulties a teacher may have while trying to construct CALL materials. The systematic journal-keeping by the researcher as the course developer, would provide a true understanding of the nature of the CALL design and construction progress.

Process of Developing CALL English Lessons

In designing and developing CALL English Lessons for Nursing Science Students, the researcher followed the three major steps including material selection, design of CALL English lessons, and construction of CALL.

Material Selection

A number of things needed to be considered when developing CALL English lessons, for instance, the content of CALL lessons, resources to support CALL lessons, pre-requisite skills and background knowledge, assessment techniques, and time allocation. In this study, the material development would be the first stage of overall process. It consisted of four steps which included: 1) identifying the instructional goals and objectives; 2) defining the scope of the content and language skills; 3)

selecting and developing content materials; and 4) specifying the instructional design and activities. The details were discussed in the following steps

The significant aspect that must be dealt with when developing materials is identifying of learning goals and objectives. It allowed the developer to create a clear picture of what and how to be taught. To design CALL lessons, the researcher studied the course description of foundation English curriculum for Nursing Students in order to define the instructional goals and objectives of CALL English lessons. The course objective was to enable nursing students to use English to communicate in their future career. In other words, it would help them improve their listening, speaking, reading, and writing skills to carry out different tasks in hospital settings. Stating learning goals and objectives before developing CALL content materials gives a sense of direction of the lesson of a course. Having clear objectives gives the teacher a basis for determining which content and activities are appropriate for the course.

The second step encompassed the incorporation of the language aspects and content learning. To scope down the content materials, several factors such as teachers, students and contextual variables should be taken into consideration (Richard, 2005). The researcher needed to work with a conception of needs determined by the institution and students' future career setting (Graves, 1996). To seek for the needs and interests of students in the course, initially the researcher researched the content from the textbooks and listed the hospital themes and topics based on the objectives of the course. These included the hospital admission, monitoring a patient, and discharging a patient. Then the researcher asked thirteen people - three nursing teachers (two Thais and one foreigner), three English language instructors (two Thais and one foreigner), five nursing students and two nurse practitioners from private and public hospitals, to ensure the content in CALL English lessons met their career needs. The useful comments and suggestions were provided for final decisions. Finally, two hospital themes, i.e., hospital admission and monitoring a patient were selected.

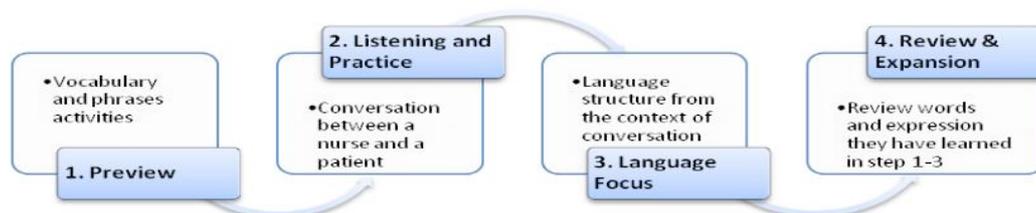
After breaking up the themes into the specific content, the target language needed to be determined (Graves, 1996). In this course, the objective language of learning was for communicating between a nurse and a patient at hospital wards. The language features in contexts, such as registering a patient, orienting a patient and family to the ward, giving and explaining the medication to a patient, and monitoring a patient's vital signs were covered. Each unit aimed to emphasize words and phrases for specific nursing activities. Various types of conversational situations were selected and taught throughout the lessons. Language skills focus and exercises were centered on communication at hospital settings.

In selecting materials for CALL English lessons, the criteria used by Kito (1989) emphasized the familiarity of the students' content background knowledge and their proficiency levels. In this study, nursing content materials and language skills were explicitly linked so the selecting and developing materials of CALL English lessons primarily depended on these mentioned factors. To do this, the researcher set up a students' characteristics form and had students fill in their information. Then the detail of students' previous learning of English courses, skills and their interest in language learning and learning styles were used to decide in selecting and developing content materials phase.

Regarding the content material for CALL, the researcher searched for and attempted to collect materials related to professional nursing from various resources. These included textbooks, commercial books, CD's, articles, magazines, internet websites, brochures, and information sheets from hospitals, supplementary activities, and other accessible content experts in Nursing Science. In addition, the existing in-house content materials could be selected. The combined resources were combined and exploited to meet the needs of students as well as their proficiency level in English language learning. In this step, it took researcher several weeks to find the materials that she wanted for each lesson because the content in nursing contained lots of medical terms, and the texts were very long for the CALL lessons and it would not be interesting to students. So, the developer needs to carefully choose the appropriate text for the language class. That means both difficulties of content and language should be taken into consideration at the same time. So, selecting materials to teach should be well- balance both nursing content and language itself.

CALL English lessons for Nursing Science Students primarily were developed on tutorial CALL activities to increase the effectiveness of English communication at hospital settings. The useful words and expressions employed in communication between nurses and patients were centered in the learning activities. The focus is on gradually building of content from simple to complex, from more close-ended, more open-ended, and from concrete to abstract (Grave, 1997). At this point, the researcher took advantages of the sequencing of CALL content-based materials and design, based on the building blocks which were gradually graded from the simplest language activities to the most complex ones. In addition, one task should be connected to another activity in a logic sequence of learning process. In the implementation of sequencing tasks to students, Richard and Rodgers (2001) and Skehan (1998) suggested that the tasks should contain clear criteria for the outcomes assessment, and assist teachers to manage learning tasks in a unit plan. With these ideas, the sequencing of tasks (pre-task, task-cycle, and language focus) by task-based language learning for CALL content-based materials would be beneficial for students. The illustration of the learning steps in each lesson was presented on the next page in the Figure 1.

Figure 1: Learning Steps of CALL English Lessons



As seen above, the formulation of CALL English lesson comprised four steps of learning practice. These included Preview, Listening and Practice, Language Focus, and Review and Expansion. The Preview step aimed at brainstorming the ideas for the lessons as a pre-task. It presented vocabulary and phrases activities relating to the topic and content which helped students to recall, and learn the useful words before listening to the conversations. For the Listening and Practice step, it focused on the

dialogues that modeled everyday spoken English between a nurse and a patient, and a nurse and a patient's family at hospital wards. In this section, the students could listen to various conversations as often as they wanted in order to complete the activities.

The following section was Language Focus. At this step, the target language structures in the context of each conversation were highlighted and practiced, starting from the controlled to open-ended exercises to make students aware of the use of the correct English sentences. The last step was Review and Expansion. This step focused on the elements of conversational English related to what they had learned in the previous three steps. Revision and Expansion was the follow-up to the lesson and reading associated nursing contents was also included for the revision. It is hoped evidence that a coherent instructional unit and activities can help students connect language content from different angles, and understand the relationship between the parts and the whole lessons. Moreover, well-graded activities and well-selected materials can lead to challenging and motivating material.

The Design of CALL English Lessons

After the content-based nursing materials were designed and developed, the next step was to deliver the task to a computer program. At this step, the design phase of CALL was considered to be extremely crucial, because CALL application envisaged an important role for the teacher in monitoring students' language learning performance and progress (Jayachandran, 2007). Therefore, the design of CALL needed to go beyond the language theory when implemented. Chapelle (1998, 2001) provides some key considerations for designing a CALL program that follows the models of second language acquisition. In this phase, the blueprint for the entire CALL lessons in the form of the delivery system software, content outlines, screen templates, flowcharts and storyboard. Also, it presented design guidelines and recommendations for structuring and formatting of the CALL English lessons. The flowcharts, screen design and storyboards need to be done in the designing stage.

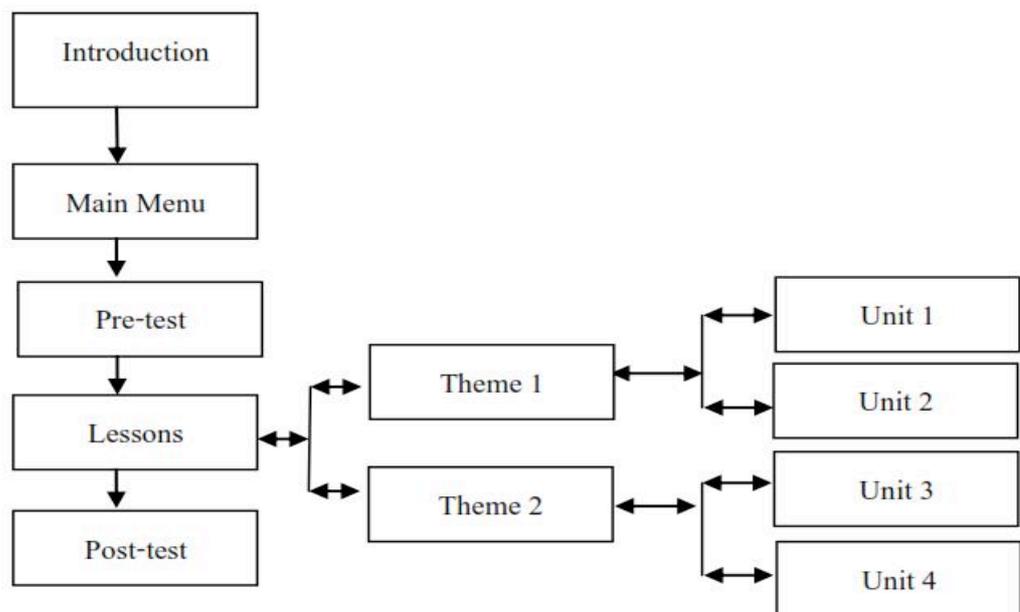
Regarding the development of CALL English lessons, the researcher studied the application of educational software programs from various resources, and the capacity of the computer hardware in order to produce effective CALL English lessons. The researcher explored available various types of computer software from various sources extensively. and found that the Adobe Captivate was the most popular software, at that time. Moreover, it was suggested by many scholars (Daughterty & Russo, 2007; Braun, 2007; Gervasi, Murgante, and Lagana, 2008) that it was a suitable and effective educational software program to create such computer lessons. The reasons were because the software was developed for the use of most educators in producing e-learning. It is a new and easy tool for creating computer lessons and can also be incorporated into a tutorial CALL.

In addition, it is compatible with media elements, images with the Adobe Photoshop and other types of program files that the researcher can open and edit using those applications, when needed. Importantly, the computer software can also track and report students' learning throughout the program. With these advantages, the researcher, as a course developer of CALL decided to choose the Adobe Captivate, the latest version for producing CALL English lessons. In this study therefore, the researcher used her personal computer to create the CALL English lessons, the

computer hardware needed to meet the system requirement of the program in order to work it effectively. Briefly, selecting computer software to deliver system of learning activities must be taken into a careful consideration because the software should optimize students' chances in interacting with the content, engage in activities, and develop competence with the foundations of learning, and it should help determine learning outcomes. Deep understanding of the relationship between the applications of computer software and desired learning activities in CALL, allows a designer to support student learning in creative ways.

In designing CALL, the researcher initiated the flowchart to depict the sequence and structure of the program. There were two main sections in CALL English lessons - the introduction and the main menu. The introduction comprised the information of CALL English lessons, including the title and objectives of the course. The main menu consisted of "Home", "Pre-test", "Lessons", and "Post-test" that could link the two themes. Each theme contained two lesson units.

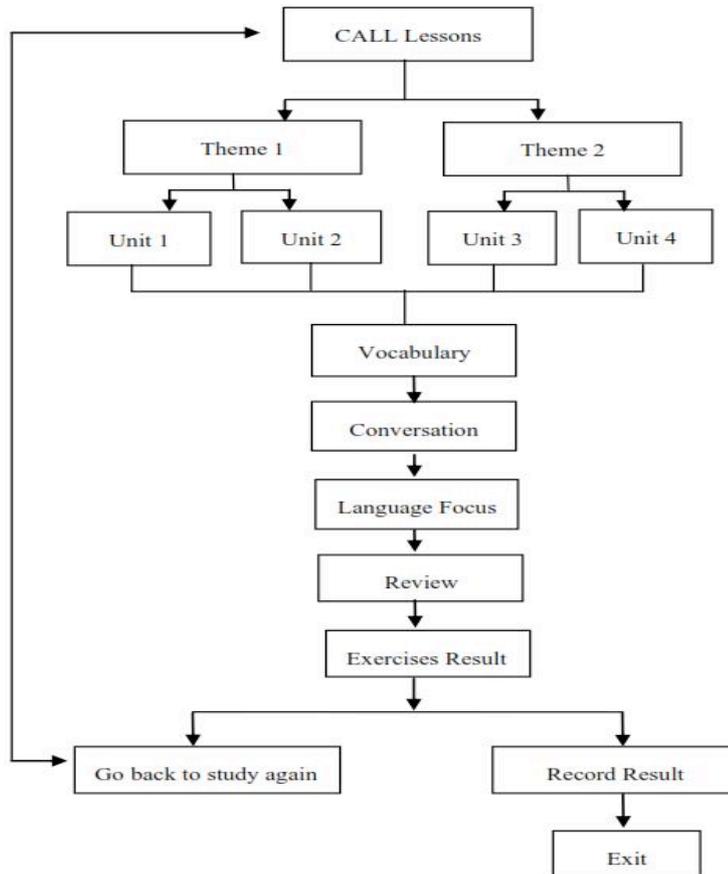
Figure 2: The Flowchart of the CALL program



For more detail, a diagram of CALL English lessons was created to indicate the sequence of the frames which appeared on the screen from the beginning to the end of the lessons. In the use of CALL, every student needed to install the program to their PC at the computer lab, start the lessons by taking a pre-test, and then study in each CALL unit by following the learning steps provided, until the end of each lesson. The feedback from each exercise was provided for students to self-evaluate their learning. The result of each exercise was shown at the end of each lesson for students to see if they were satisfied with their learning scores, so they could either choose to go back to the lesson and study again, or record their score results and exit the program. With the help of feedback provided after answers were submitted, it was found that students were encouraged to redo the exercises until they were satisfied with their scores. This actually helped them remember the words and structures presented in the lessons. The

Flowchart could depict the route for the lessons to go via the computer software program.

Figure 3: The flowchart of CALL Themes and Units



The next thing to consider after the design of the flowchart was the look and feel of the screen that is used in the project. This includes defining the color scheme and location of graphics, icons, audios, buttons and check boxes. The effective screen design should reflect balance among learner attributes, content factors and processing requirements of the learning tasks, and should maintain learners interest (Stemler, 1997). In this study, each CALL unit contained the primary functional areas based on the purpose of each screen including title, instructional text, the graphics, feedback, icons and navigation options.

In the CALL unit, the title of each screen is located at the top of the page and shows the unit title. The text is on the right above the graphic while the feedback, icons and navigation options are on the bottom. However, the tiles of the menu screen and question screen design are slightly different in the functional areas. It contains the directions and questions, answer choices, graphics and pop-up dialog for the feedback. The unit title and the learning steps is on the top, while the text of questions and answer options were under the graphics. The feedback text is down below the answer, and the same icon box consistently appeared on the screen for the listening section.

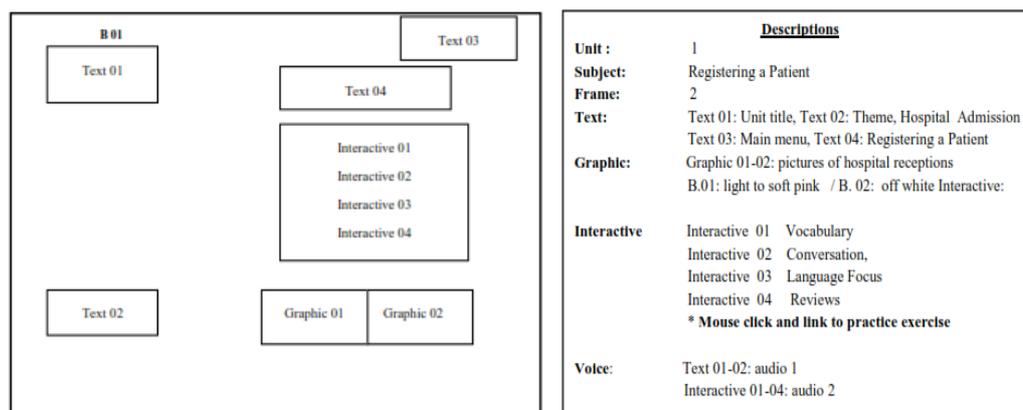
Figure 4: the Screen Design



After the content had been outlined and the screen designs had been determined, the researcher started drawing a square on the paper with the detailed descriptions of what should be in each frame in lessons. The detail includes the Unit number, subject, and frame, text, graphic, interactive, and sound. The outlined descriptions helped the researcher organize the ideas before creating the actual CALL English lessons, seeing the sequencing of the whole lessons systematically. The example of the storyboard was presented in the figure 5.

Figure 5: The Storyboard of the Main Page

Screen Template



Development of CALL Lesson Unit

To develop the elements of CALL lessons, audios, graphics and images, instructions and directions, questions and texts should be taken into account. For completing CALL English Lessons, the segments of the audio, pictures, and types of questions were outlined. The following were the details of the elements which the researcher intended to include in CALL.

The researcher prepared a script of both written and spoken texts read by a native speaker. To make the lessons more interesting, the audios were added to CALL English lessons in parts of the directions, the pronunciation, the conversations between a nurse and a patient, and the feedback. The audio scripts were read and recorded by both male and female native speakers. The audio files were exported to be MP 3 files. After that, the process of editing and adjusting the sound was employed to make the audio clearer using the audacity software sound editor.

The pictures are visual aids that can be very effective, meaningful and authentic if used in direct correlation with the lesson. In this study, collected the pictures from various sources were used. These included the picture dictionary, pictures from picture stocks, and pictures from the university nursing station. In order to get authentic pictures for CALL English lessons, a picture of the nursing activities and rooms, and medical instruments at an authentic place were taken to make it fresh and interesting. For this case, the researcher used College of Nursing as the setting for the picture of CALL English lessons.

The tutorial of CALL English lessons were aimed to train students' language use in communicating at hospital wards. To make the training hour meaningful for students, the teaching contents and graded quizzes were created including several types of questions. For designing the learning activities, several researchers (Pica, Kanagy, & Falodun, 1993; Larsen-Freeman and Long, 1991) suggested that the learning activities, by using a mouse click or filling the blanks would lead to an increase in successfully negotiated interactions. The learning activities in this study included the multiple-choice, Fill-In-The-Blank, Short Answer, Matching, and Sequencing. Through the software system, the researcher could control what happens to the learner

answering questions correctly or incorrectly, and also could track their progress in learning. To develop the learning activities, the texts and the correct responses to layout the instructions in each exercise were written, and noted the feedback for correct and incorrect responses for the beginning and ending activities and lessons, and then produced them. The flowcharts and design when and what kind of interaction would occur between the computer and student were made to see the process of learning.

Having the audio recordings for lessons, images, and question slides, the next step was to combine the pieces of media into a frame design with the software program to present CALL English lessons. To ensure CALL English lessons for Nursing Science Students are purposeful, the alpha testing was employed. The researcher had experts in the area of nursing content, educational technology and English language teaching to validate the CALL English lessons. The evaluation checklist form containing the topics of content and presentation, graphics, sounds and instructions and learning management system, were assessed for the quality of the program (Johnson, 1992). The researcher revised the CALL program where needed, according to the evaluation results and experts' comments.

Discussion and Conclusion

ESL Teacher as a Course Developer

From data discussed above, the researcher learned that the development of CALL English Lessons for nursing science students has several unique characteristics which set it apart from the development of general language teaching materials. The CALL English Lesson development process is complex, containing several steps that require the researcher's collective experiences, knowledge and skills. These include: the knowledge of English language teaching and learning theory, content knowledge of other academic disciplines, knowledge of the learning principles of CALL and understanding available computer software programs and skillfully using them. Moreover, the development process of the CALL program of study was very time-consuming but well- worth the effort. Each characteristic is discussed in detail in the following sections.

A Material Development as a Complex Process

The development of material for class teaching is understood as a linear process and having systematic sequences which involve a number of steps. The steps often start by setting the goals and objectives, conceptualizing the content, selecting and developing the materials and activities, organizing the contents and activities and ending by evaluation. These steps are widely-known and commonly used among course developers and educators in class material design and development. Unlike in the development process in content-based learning materials via the computer lessons, with CALL English Lessons for Nursing Science Students, the material development process is more complex than it seems and every step needs to be presented in great detail. In other words, the complexity comes from the three phases of the development process of CALL English Lessons for Nursing Science Students. The first phase was to develop the content material in nursing science. It is hard for this researcher because she does not have the background knowledge in nursing science. Therefore, consultation with content experts needed to be done, frequently, in making every single decision concerning material content selection. The second phase was to

design the materials for the use of CALL English Lessons. The researcher found that designing the computer lessons was much different from doing it on paper. The screen design, drawing the flowcharts and storyboards was not easy and could take an hour to finish. The third phase was to construct CALL English Lessons. It was found that inserting each media item into the layers of the template was difficult and had to adjust the timeline display of each screen. Dealing with technical problems made progress more difficult. In addition, each phase had its own principle and idea in creating them. Also, it often happened that there were some reverse steps within each phase.

Needs of ELT Knowledge, Content Knowledge and Computer Skills

Several tasks and steps in developing CALL require researcher' collective experience, knowledge and skills to deal with the issues which were encountered during the process of development. These experiences include ESL material development, extended experience with commercialize materials, i.e., Nursing Science, the knowledge of English language teaching and learning theory, content knowledge of other academic disciplines, the learning principles of CALL, computer skills, and knowledge of the computer software programs. Lacking any of these domains could lead to this project not being completed. Meganathan (2008) also supports this finding. "... lacking an understanding of material process would not only find it difficult to develop materials but also would find it much difficult to deliver them to an effective manner" (page7) In the development of content-based materials in nursing science, the developer should have knowledge of the content of other disciplines and an understanding of the specific language features of the target language. Medlin (2009), Arakelian, Bartran and Magnall (2003) assert that the language in a hospital setting is comprised of register, jargon and lexicon containing the technical language of a special field. Many words are used in the hospital have a special meaning, i.e., negative (a good test result), drip (an intravenous medication), rhythm (heartbeat). This type of language would assist the researcher in identifying language form in order to explain the usage for students.

Another point the researcher wants to convey is that the developer's ability to use educational software programs in creating multi-media materials is extremely necessary. It required lots of experience and knowledge of designing and developing CALL materials. Self-study and self-practice may be not enough to creating the CALL program of this study. Special training of the ELT teacher in the use of educational software may be beneficial at least to understand the principles, application, and basic computer skills and in bringing them to construct their own materials to teaching class, as expected.

Time-Consuming

Material development is complex and time consuming (Markee, 1997; Tomlinson, 1998; Seepho, 2002). In this study, the researcher spent about 7 months developing CALL English Lessons. As mentioned earlier, the development of CALL English Lessons consisted of multi-steps and the reverse steps —often coming between steps in the process —that needed the researcher's time while revising the content materials. For instance, when the researcher needed to shorten the text length, adjust the sound volume, or even customize the screen templates, it was not easy to accomplish due to the location of the objects and frames. In fact, each CALL unit contained about 60-85 frames of task activities. Making minor changes during the

process increased the time to finish them. Besides the phase of development, this researcher's time was spent getting to know the software application because inexperience using computer software programs could lead into the ineffective CALL. It is necessary for a researcher to have the computer skills required to handle unexpected issues or technical problems that may be encountered. Therefore, most of this researcher's time was devoted to study the tools and the tricks of computer software programs, and put them in practice. It took this researcher several months to master the programs, prior to the construction of CALL.

Conclusion

From the beginning phase of the development process of CALL, to the end, led this researcher to conclude that producing CALL materials requires not only the knowledge of English language teaching, content knowledge or computer skills but also possessing creativity, and experience in the architecture, design and development of both content specific materials, and Computer-Assisted Language Learning materials. Moreover, the materials developer needs to have an understanding of the nature of the course, and be able to adapt and adopt the materials to his/her own teaching.

EFL teachers can be CALL developers. However, to lessen some technical challenges, they should be trained in the following areas: a) CALL principles for foreign language learning; b) how to use some practical authoring software; and c) how to design and develop effective CALL lessons. Without basic knowledge and skills in computer programs, the lessons can be very dry and not attractive enough to attract the students' attention and the production process will be unlikely to succeed.

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